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Forest Service

Tongass  
National Forest

R10-MB-365c

May 1998



# Chasina Timber Sale

## Final Environmental Impact Statement

### Record of Decision



# Acronymns And Symbols

ADF&G	Alaska Department of Fish and Game
AHMU	Aquatic Habitat Management Unit
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
ASQ	Allowable Sale Quantity
BBF	One Billion Board Feet
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFL	Commercial Forest Land
CFR	Code of Federal Regulations
CZMA	Coastal Zone Management Act of 1976
DBH	Diameter at Breast Height
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EVC	Existing/Expected Visual Condition
FEIS	Final Environmental Impact Statement
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	Geographic Information System
IDT	Interdisciplinary Team
KPC	Ketchikan Pulp Company
KV	Knutsen-Vandenberg Act
LTF	Log Transfer Facility
LUD	Land Use Designation
LWD	Large Woody Debris (same as LOD)
MBF	One Thousand Board Feet
MELP	Multi-Entry Layout Process
MIS	Management Indicator Species
MM	Maximum Modification
MMBF	One Million Board Feet
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
P	Primitive
PR	Partial Retention
R	Retention
RM	Roaded Modified
RN	Roaded Natural
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
SHPO	State Historic Preservation Officer
SPM	Semi-Primitive Motorized
SPNM	Semi-Primitive Nonmotorized
TLMP	Tongass Land Management Plan
TRUCS	Tongass Resource Use Cooperative Survey
TTRA	Tongass Timber Reform Act
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
VCU	Value Comparison Unit
VQO	Visual Quality Objective
WAA	Wildlife Analysis Area

## Acknowledgments

Front cover: By Cindy Ross Barber, 1992 The design illustrates the range of interconnected issues addressed in the EIS





File Code: 1950

Date: April 27, 1998

Dear Reader:

Attached is the Record of Decision (ROD) for the Chasina Project Area. If you requested complete documentation of this decision, the following items should be found in the package:

1. Record of Decision (Volume III)
2. Final Environmental Impact Statement (Volume I, including summary)
3. Final EIS Appendices A - K (Volume II)
4. Final EIS Appendix K Response to Public comment (Volume II)
5. Alternative Map Pack (two large scale maps)
  - (a) Map of Existing Condition plus the total unit pool (Alternative 6)
  - (b) Record of Decision Map

If you elected to receive the summary set of documents, the package should include only the ROD and Maps. Copies of the entire Final EIS are available for review at Forest Service Offices in Ketchikan, Craig, and Thorne Bay. Copies have also been sent to libraries throughout Southeast Alaska.

The ROD documents my final decision on the selection of an alternative, and the factors considered in reaching the decision. The effective date of implementation for the decision and the Notice of Rights of Appeal are also specified in the ROD.

I want to thank those of you who took the time to review and comment on the Draft Environmental Impact Statement and also those who participated in the Subsistence Hearings. Your interest in the management of the Tongass National Forest is appreciated.

Sincerely,

BRADLEY E. POWELL  
Forest Supervisor

Enclosures





# **Chasina Timber Sale**

## **Final Environmental Impact Statement**

### **Record of Decision**

United States Department of Agriculture  
Forest Service—Alaska Region

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Lead Agency: U.S.D.A. Forest Service  
Tongass National Forest  
Ketchikan Administrative Area

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The USDA Forest Service proposes to harvest up to approximately 50 million board feet (MMBF) of timber in the Chasina Project Area, Craig Ranger District, Ketchikan Administrative Area, Tongass National Forest. Timber volume would be offered through the Ketchikan Area timber sale program. The actions analyzed in this EIS are designed to implement direction contained in the Tongass Land and Resource Management Plan (Forest Plan) and the Tongass Timber Reform Act. The EIS describes six alternatives which provide different combinations of resource outputs and spatial locations of harvest units. The alternatives include: 1) No Action, proposing no new harvest from the Project Area at this time; 2) configure harvest units to emphasize wildlife habitat and maintain the integrity of large unfragmented blocks of old-growth forest; 3) configure harvest units to emphasize a positive net economic return, while seeking to strike a balance between competing resource uses; 4) optimize the amount of timber offered while keeping the amount of new road construction to a minimum; 5) configure harvest units to emphasize timber sale economics and conventional cable yarding methods; and 6) configure harvest units to provide the maximum amount of timber within Forest Plan Standards and Guidelines.

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# Summary

## Proposed Action

In compliance with the National Environmental Policy Act (NEPA) and other federal and state regulations, the Forest Service has prepared this Environmental Impact Statement (EIS) to assess the effects of harvesting timber in the Chasina Project Area of southern Prince of Wales Island in Southeast Alaska. The proposed action would harvest up to approximately 50 million board feet (MMBF) of timber from the Chasina Project Area. This timber would be made available with several offerings through the Ketchikan Area Independent Timber Sale Program. As many as 11 miles of new road would be built to facilitate timber removal. One existing, and one new, log transfer facility (LTF) may be used to implement the timber harvest. Implementing this action would contribute to a current three-year timber supply for the timber industries. It also would move the Project Area toward the desired future condition as described in the Tongass Land and Resource Management Plan (Forest Plan). The proposed action would be consistent with the standards and guidelines of the Forest Plan. Any potential direct, indirect, or cumulative environmental effects as well as the irreversible or irretrievable commitment of resources that would result from implementing each of the alternatives is described.

## Purpose and Need

The purpose and need for the Chasina Project is to implement direction contained in the Forest Plan, to help provide a sustained level of timber supply to meet annual and the forest plan planning cycle market demand, and to provide local employment in the wood products industry, consistent with providing for the multiple use and sustained yield of all renewable forest resources. Another objective is to provide timber volume that will contribute to a three-year current timber supply under the Ketchikan Area Independent Timber Sale Program. The alternatives and actions considered are possible approaches to meeting this purpose and need. The EIS study process was designed to help insure that, in meeting this purpose and need, the Forest Service makes the most informed decision possible for this project area specifically, and for the Tongass National Forest generally. The Chasina Project is expected to provide up to approximately 50 MMBF of timber, given the guidance of the Forest Plan. Reasons for scheduling the Chasina Sale at this time are described in detail in Appendix A.

## Project Area

The 68,927 acre Chasina Project Area is located on southern Prince of Wales Island, approximately 25 air miles southwest of Ketchikan in Southeast Alaska. The Project Area includes all National Forest System lands on Prince of Wales Island north of Moria Sound and south of Cholmondeley Sound. The Project Area provides habitat for numerous species of wildlife and fish. The isolated road system provides limited opportunities for recreation and subsistence activities. Extensive timber harvest has occurred on lands owned by Kootznoowoo Native Corporation in South Arm Cholmondeley Sound and other areas to the

east. In recent years, many caves have been discovered and explored in the area. The visual character also attracts visitors to the area, and represents an important resource for tourism development. Detailed descriptions of the existing conditions of the Project Area are provided in Chapter 3 of this EIS.

## Issues

Analysis of the proposed land use action in the Chasina Project Area has been built upon a number of issues identified during scoping consultation with members of the public, government agencies, and the Forest Service. Each issue was analyzed to determine the effect the proposed action would have on the overall management and environment of the Chasina Project Area as well as any direct and indirect effects on resource values and uses. This process focused the analysis on eight broad issues determined to be significant and within the scope of this EIS, including timber supply, subsistence, wildlife and biodiversity, fish habitat and water quality, recreation, visual resources, social and economic factors, and karst resources.

## Alternatives

Six alternatives, including one No Action alternative, are described in detail in Chapter 2 of the Final EIS. Alternative 1 represents the existing condition of the Project Area and its adoption would not implement any of the actions described in this document. This is the No Action alternative against which all others are compared. Alternatives 2, 3, 4, 5, and 6 represent different means of achieving the project purpose and need while responding to the public issues with differing emphasis. Maps of the alternatives are presented at the end of Chapter 2.

All of the action alternatives meet Forest Plan objectives and standards, but do so with different configurations of roads and harvest units. Alternative 6 proposes harvest on all units that are feasible to harvest at this time under federal and state laws and forest-wide standards and guidelines. Alternative 4 emphasizes helicopter harvest of areas that are unroaded (Port Johnson peninsula and Cannery Creek). Alternative 2 emphasizes the protection of large blocks of wildlife habitat and connecting travel corridors. Alternative 5 emphasizes timber economics and conventional yarding methods. Alternative 3 of the final EIS emphasizes the protection of high vulnerability karst resources and high value subsistence, wildlife, and visual resources, and responds to substantive comments received on the Draft EIS.

## Environmental Impacts and Mitigation

The Final EIS identifies the site-specific impacts of the proposed alternatives, including the No Action Alternative. Environmental Consequences are described in detail for each resource in Chapter 3. Chapter 2 provides a summary and comparison of environmental consequences by alternative. Implementation of Alternative 3, the preferred alternative for the Final EIS, would result in harvest of approximately 43 MMBF of timber from 53 harvest units and ten miles of road.

Forest-wide standards and guidelines were applied in the design of the proposed harvest units and roads. A large number of site-specific mitigation measures were incorporated into the harvest unit and road design. Chapter 2 provides a description of site-specific mitigation measures; Appendix J provides a listing of each unit incorporating site-specific measures.



Chapter 2 includes a description of Project-specific monitoring recommendations as well as Forest Plan and Ketchikan Area monitoring programs.

## Public Participation

Comments and suggestions were solicited from the public and interested Federal and State agencies beginning with formal scoping in October 1995. This input helped in determining the issues to be addressed and their scope.

The Chasina Draft EIS was made available to the public on March 7, 1997. The comment period closed on April 25, 1997. ANILCA subsistence hearings and open houses were held in Hydaburg and Saxman during the comment period. Written comments on the Draft EIS were received from 13 individuals, organizations, and agencies. As a result of this input, and a new Forest Plan, all alternatives were modified for the Final EIS. The preferred alternative responds to many of the substantive public comments received on the Draft EIS and during the subsistence hearings. Other changes between the Draft and Final EIS are summarized in Chapter 2.



# Record of Decision

## Background

The purpose and need for this project is to implement direction contained in the 1997 Tongass Land and Resource Management Plan (Forest Plan), to help provide a sustained level of timber supply to meet annual and Forest Plan planning cycle market demand, and to provide local employment in the woods products industry, consistent with providing for the multiple use and sustained yield of all renewable forest resources. Another objective is to provide timber volume that will contribute to the Ketchikan Area Independent Timber Sale Program. The alternatives and actions considered are possible approaches to meeting this purpose and need. The EIS study process was designed to help insure that, in meeting this purpose and need, the Forest Service makes the most informed decision possible for this project area specifically, and for the Tongass National Forest generally. The Chasina Project is expected to provide up to approximately 50 MMBF of timber, given the guidance of the Forest Plan.

Under the Forest Plan, most of the project area has been given Land Use Designation (LUD) Timber Production, VCU 674 is Modified Landscape, and areas around Kitkun Bay and Chasina Point are Old-growth Habitat Reserve. The Forest Plan schedules timber sale preparation for all VCUs in the project area. A comparison of the desired future condition for the project area, as reflected in the Forest Plan direction, with the existing condition shows the need to convert suitable stands of old growth to managed productive stands capable of long-term timber production.

Section 101 of the Tongass Timber Reform Act of 1990 (TTRA) directs the USDA Forest Service "... to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." Section 101 of the TTRA specifies that Forest Service efforts to seek to meet market demand are subject to appropriations, National Forest Management Act (NFMA) requirements, and other applicable laws. Providing a timber supply from the Tongass for sustained local wood products industry employment and related economic and social benefits is an objective of the Forest Plan and the Alaska National Interest Lands Conservation Act (ANILCA), as amended by the TTRA.

There is demonstrated mill capacity in the region to process the logs, if supply of timber is available. There is also a projected need for the timber volume being considered from this project area (see Appendix A) for the Forest Service to come closer to meeting an objective of providing a three-year supply of timber under contract to the existing dependent industry, as a means of providing for stability in relation to fluctuating market demand (Morse, 1995). There is a substantial component of the economy of Southeast Alaska that is dependent on a viable timber industry. Based on these factors, the need for the project is clearly indicated.

Public scoping, data collection and analysis, and document production began with issuance of the Notice of Intent published in the Federal Register on November 2, 1995. This Record of Decision (ROD) and the Final Environmental Impact Statement (FEIS) disclose the environmental effects of the alternatives considered and document the decision for authorization of activities within the project area.

## Record of Decision

In developing the FEIS and this ROD, it is recognized that less than complete knowledge exists about many relationships and conditions of wildlife, fish, forests, jobs, and communities. The ecology, inventory, and management of a large forest area is a complex and developing science. The biology of wildlife species prompts questions about population dynamics and habitat relationships. The interaction of resource supply, the economy, and communities is the subject matter of an inexact science.

The data and level of analysis used in the FEIS were commensurate with the importance of the possible impacts (40 CFR 1502.15). When encountering a gap in information, the interdisciplinary team (IDT) took one of two approaches: (1) they collected the missing information or conducted the analysis necessary to identify important relationships; or (2) they concluded that, although the missing information would have added precision to estimates or better specified a relationship, the basic data and central relationships are sufficiently well established in the respective sciences that the new information would be very unlikely to reverse or nullify understood relationships. Thus, any information missing from the FEIS was determined to be not essential for a reasoned choice among the alternatives.

## Decision

This Record of Decision documents my decision to make timber volume available from the Chasina Project Area to meet the Ketchikan Area Independent Timber Sale Program requirements. My decision encompasses the following:

- the volume to make available in this project area in multiple “timber offerings”;
- the location and design of timber harvest units;
- the location and design of road systems;
- the location and design of the log transfer facility;
- necessary mitigation measures, and enhancement opportunities for resources other than timber;
- whether there may be a significant restriction on subsistence use, and if so, related findings and measures to minimize impacts on subsistence users;
- road management objectives to include closures for resource protection.
- non-significant Forest Plan Amendment

It is my decision to select Alternative 3 for implementation in the Chasina Project Area (see the description of Alternative 3 in Chapter 2 of the Final EIS). This decision is responsive to issues raised during scoping, data gathered and analyzed, public responses to the Draft Environmental Impact Statement (DEIS), and testimony received at the subsistence hearings.

Specifically, I select Alternative 3 without modification and authorize the required actions to implement this decision. Furthermore:

1. The Selected Alternative will harvest about 1,710 acres of commercial forest land (CFL) to meet the requirements of the Independent Timber Sale Program. This specified harvest will provide approximately 42.5 MMBF of sawlog and utility volume along with 0.5 MMBF of right-of-way (ROW) volume, for a total of 43 MMBF. ROD Appendix 1 lists each unit approved for harvest. Design features of the harvest units are described in detail on the Unit Design Cards in Appendix 2 of the ROD. Silvicultural prescriptions will be developed for each unit prior to harvesting.



2. The Selected Alternative includes partial cut harvest, rather than clearcut harvest, for 666 acres. This is consistent with Forest Service Chief's policy to reduce the amount of clearcutting. Appendix H of the FEIS displays a list of harvest units by alternative for which partial cut harvest is prescribed. The partial cut harvest prescriptions for these units are intended to promote regeneration (especially red and yellow cedar), provide for stand structural diversity, maintain riparian habitat, maintain scenic quality, and leave young, vigorously growing trees. The impacts to residual trees will be minimized. The Unit Design Cards in ROD Appendix 2 of the FEIS provide specific direction for field layout to accomplish these objectives.
3. The Selected Alternative includes reconstruction of 8.4 miles of existing road, and construction of 16.7 miles of new road in order to access the specified timber harvest units. ROD Appendix 3 of the FEIS contains the Road Cards with direction for the location of each road. The Road Cards list road segments and road management objectives including closures for future management of the transportation system.
4. The existing Log Transfer Facility (LTF) located at Lancaster Cove will be reconstructed and used to transfer logs to a barge after timber harvest. A new LTF will be constructed in West Arm Cholmondeley Sound. It is my decision to select the preferred method of log transfer for this LTF as an A-Frame lift-off system. This method consists of a shot-rock embankment with a vertical bulkhead to access deep water. Log bundles are lifted off trucks and placed in the water. This decision is based on analysis found in the Marine Environment, Log Transfer Sites, and Related Facilities Section of Chapter 3 which documents that the A-Frame system for the LTF located at West Arm Cholmondeley Sound has the least affect on marine habitat as well as being the most cost efficient. Harvest units on the Port Johnson Peninsula will be helicopter yarded directly to barges or boom bags.
5. This Record of Decision identifies mitigation measures authorized to reduce or eliminate adverse environmental effects of the timber harvest and road construction activities specified in the Selected Alternative. Chapter 2 of the FEIS specifies the implementation and effectiveness monitoring that will be conducted to determine if the resource management objectives have been met.
6. Appendix H of the FEIS includes descriptions of the enhancement opportunities for the Selected Alternative which are feasible following implementation of this action. These opportunities will be included in the Sale Area Improvement (SAI) plan(s) developed in conjunction with the timber sale contract documents for each offering.
7. I have reviewed the cumulative effects of the proposed harvest in the selected alternative including previous harvest on all land ownerships. I have determined that the selected alternative does not pose a significant risk to fish habitat or water quality. I base this determination on the watershed analysis in the Aquatic Resource section in Chapter 3 of the Chasina FEIS and the results of the Watershed Assessment meeting held September 18, 1997, that included the entire Chasina IDT, the Craig District Ranger, Supervisor's Office Fish and Hydrology Program Managers and the Planning Staff Officer,
8. The Chasina Point small Old-growth Habitat Reserve was expanded to the west into VCU 679 in order to meet requirements for amounts of productive old growth. These lands are depicted on the ROD map and labeled Old-growth Reserves. The described adjustment to the Chasina Point small Old-growth Habitat Reserve constitutes a non-significant amendment to the Forest Plan. The Forest Plan Amendment is in Appendix 4 of the ROD.
9. I have determined that there may be a significant possibility of a significant restriction of subsistence use of wolf and marten in the project area in the future. The effects of the Selected Alternative on the subsistence use of these species are



## Record of Decision

minimal. However, increased demand and cumulative effects of future actions may at some point result in a significant restriction of subsistence use of wolf and marten in the project area. This restriction exists regardless of which alternative is implemented, including the no action alternative. As a result, I have determined that: (1) these actions are necessary, consistent with sound management of public lands, (2) the Selected Alternative involves the minimum amount of public land necessary to accomplish its purpose, and (3) reasonable measures to minimize impacts on subsistence uses and resources have been adopted to the extent practicable while still meeting the purpose and need for this project.

10. I have included a complete set of Harvest Unit Cards for the Selected Alternative in ROD Appendix 2. A ROD unit schematic map consisting of a topographic map image of the unit and roads has been included with the ROD Harvest Unit Cards. The unit schematic map is intended to facilitate (1) accurate layout, and (2) be utilized to document final layout.
11. I have included a complete set of Road Cards for the Selected Alternative in ROD Appendix 3. The road management and access objectives for the Selected Alternative are also included.

## Reasons For Decision

1. In making my decision, I worked to assure consideration of all issues and to take into account the competing interests and values of the public. There were many divergent public, personal, and professional opinions expressed during this project. This decision will probably not completely satisfy any one particular group or individual. However, I considered all views, and I believe the decision I have made is reasonable. The Selected Alternative provides a beneficial mix of resources for the public within the framework of the existing laws, regulations, policies, public needs and desires, and capabilities of the land, while meeting the stated purpose and need for this project.
2. My decision to implement this Selected Alternative is in conformance with the Forest Plan, and sound National Forest management. I have considered the need to help provide a sustained level of timber supply to meet annual and Forest Plan planning cycle market demand, and to provide local employment in the wood products industry, consistent with providing for the multiple use and sustained yield of all renewable forest resources. Offerings implemented through this project will help meet Ketchikan Area timber supply needs.
3. No timber harvest will occur in all large, medium, and small old-growth habitat reserve areas following current Forest Plan direction. These reserves as modified, meet the size, spacing, and distance parameters as set forth by the Forest Plan.
4. I have ensured that all alternatives including the Selected Alternative meet the visual quality objectives (VQOs) as specified from the priority travel routes and key viewsheds. These priority travel routes and key viewsheds include: (1) West Arm Cholmondeley, (2) Sunny Cove, (3) Lancaster Cove, (4) Kitkun Bay, (5) Port Johnson, (6) Moira Sound, and (7) North Arm Moira. Actual viewpoints used in the analysis for meeting the VQOs for each viewshed are specified in Chapter 3 of the Final EIS.
5. I have designed the Selected Alternative so that no units will exceed 100 acres of clearcut timber harvest.

6. In the development of the Selected Alternative, I have taken action to implement the policy set by the Chief of the Forest Service on ecosystem management and a reduction in clearcutting. I have specified that 666 acres will be harvested using alternatives to clearcutting. Finally, all units will include ecosystem management principals including green tree retention. This includes the leaving of standing green trees, small islands, and other forms of structural diversity. The specific objectives for each unit are listed in Appendix J of the FEIS and in the ROD, Appendix 2, Unit Design Cards.
7. The Selected Alternative also provides for timber harvest in a manner that supports the "Alternatives to Clearcutting" study being implemented by the Forestry Sciences Laboratory (FSL). The specific harvest objectives are described in the ROD Unit Design Cards. Silviculture and logging system specialists will apply this direction in the preparation of the units for harvest. Sale administrators will ensure that the logging operations accomplish the harvest objectives for these units. Implementation of these prescriptions is intended to add to our knowledge of alternate treatments for Southeast Alaska timber types.
8. The Selected Alternative will provide the highest economic return to the Federal Government while still meeting the previously mentioned resource objectives. The Selected Alternative provides a net return of \$153.72 per thousand board feet as indicated by the current-market analysis.
9. Some public responses suggested changing all cable units to helicopter yarding. After careful consideration, I have decided to utilize some helicopter yarding to accomplish the goals and objectives of resource protection as well as to help mitigate some watershed, wildlife, and visual resource concerns. Analysis of converting all or combinations of units within most action alternatives to helicopter yarding showed above average helicopter yarding costs that could not be offset by projected stumpage values. These higher costs seriously impacted the economic efficiency of most action alternatives where a large percentage of a particular alternative is scheduled for helicopter yarding. Of the acreage in the Selected Alternative, approximately 61 percent is scheduled to be helicopter logged.
10. There have been concerns voiced about entering the Cannery Creek watershed due to the potential to affect fish habitat and fragmenting a large block of old-growth habitat. Timber harvest in compliance with Forest Plan Standard and Guidelines will maintain fish habitat. The Forest Plan Old-growth Habitat Reserve strategy maintains adequate amounts of old-growth habitat for old-growth dependent species.

## How Issues Are Addressed

In the following summary, I detail how significant issues are addressed within the Selected Alternative.

### Issue 1

#### **Timber Harvest Economics and Supply**

Of the five action alternatives, Alternative 3 produced one of the highest stumpage rates. The Selected Alternative produces a current-market stumpage rate of +\$153.72 per thousand board feet. Actual returns from the harvest will be determined for each timber offering based on current market conditions as determined through the Timber Sale Appraisal and subsequent bids.

Of the five action alternatives, Alternative 4 incurred the highest logging costs (\$326.67/MBF). Alternatives 3, 5, and 6 have the lowest estimated logging costs ranging from \$299.60/MBF (Alternative 6) to \$300.59/MBF for Alternative 3.

## Record of Decision

The economic viability of Port Johnson and Cannery Creek helicopter harvest was analyzed separately and within Alternatives 3 and 4. The Selected Alternative chose to helicopter harvest the Port Johnson units due to excessive road building costs and lack of timber volume for future entries, and because it eliminates the need to construct an LTF and avoids constructing a road through the Kitkun Bay medium Old-growth Habitat Reserve. A combination of helicopter and cable yarding was selected for the Cannery Creek drainage. It will be necessary to construct an LTF at Cannery Creek in order to effectively manage this area for timber production. Flight distances are too long to economically manage this entire area utilizing only helicopter yarding.

Public concern has been focused on the effects of falldown on community stability and the rate of harvest (ASQ) scheduled in the Forest Plan. The Forest Service has addressed this issue by incorporating updated information into the Forest Plan which includes not only the effects of falldown, but land use allocations and revised standards and guidelines. The Ten-Year-Sale-Action Plan included as part of Appendix A of the Chasina Final EIS has been updated to reflect these changes for both the Tongass National Forest and the Chasina Project Area. The Chasina project is consistent with the standards and guidelines for the Forest Plan ).

In addition to the actions listed above, the Chasina Project includes a range of alternatives that would harvest from 25 MMBF (Alternative 2) to 67 MMBF (Alternative 6) of the volume originally scheduled. The remaining alternatives would harvest approximately 42, 45, and 38 MMBF (Alternatives 3, 4, and 5 respectively).

**Highlights of the Selected Alternative (3)** include the following:

- Does the best job of balancing resource protection and timber supply, while still providing an economically viable timber sale.
- Produces the highest current-market estimated stumpage rate (+\$153.72/MBF)
- Produces 42 MMBF of economically viable timber to help support the local forest products industry.

## Issue 2

### Fish Habitat and Water Quality

There is no measurable effect on water quality or fisheries production by any of the timber harvest or associated activities proposed by any of the action alternatives. All alternatives meet the requirements and intent of the Clean Water Act. Implementation of project specific stream buffers that range up to 500 feet, which meet or exceed the TTRA's requirement to provide a minimum 100-foot buffer on Class I streams and Class II streams flowing directly into Class I streams, would effectively mitigate direct stream channel impacts from proposed timber harvest and road construction. Adherence to Best Management Practices (BMPs) outlined in the Soil and Water Conservation Handbook (USDA FSH 2509.22) during the design of units and roads will minimize the potential direct effects to fish as well.

The Chasina Project and Watershed Analysis (Chapter 3 Final EIS) implement the recommendations applicable to project-level planning presented in the Anadromous Fish Habitat Assessment (AFHA) report of January 1995. Site-specific BMPs were developed and selected to minimize the potential for impact to fish habitat. For example, Class I anadromous streams received a 300-foot no-cut buffer prescription in Cannery Creek. Site-specific BMPs were developed and selected to minimize the potential for impact to fish habitat. These site-specific BMPs are noted on the individual ROD Unit Design and Road Cards in ROD Appendix 2 and 3.

Fish habitat capability models are used to estimate the effects of timber harvest on the capability of streams to provide habitat for selected species of salmon and trout. Because there are many factors which influence fish populations—including commercial/sport harvest, oceanic conditions, and predation—these computer models provide only relative measures of



habitat capability. These models indicate that there is no significant direct change in habitat capabilities.

Some watersheds within the project area have experienced prior timber harvest and road construction. Reentering these drainages may generate a greater potential risk for impacts on water quality, with the risk expected to be greater in those watersheds with the higher cumulative percents of harvest. Table ROD-1 shows the existing direct and indirect effects of timber harvest and road construction by third-order and important second-order watersheds during the 30 year period, 1967-1997.

I have reviewed the cumulative effects of the proposed harvest in the selected alternative including previous harvest on all land ownerships. I have determined that the selected alternative does not pose a significant risk to fish habitat or water quality. I base this determination on the watershed analysis in the Aquatic Resource section in Chapter 3 of the Chasina FEIS and the results of the Watershed Assessment meeting held September 18, 1997, that included the entire Chasina IDT, the Craig District Ranger, Supervisor's Office Fish and Hydrology Program Managers and the Planning Staff Officer.

**Table ROD-1**  
**Cumulative Watershed Effects, Percentage of Watershed Harvested and**  
**Roaded in Third-Order and Important Second-Order Watersheds**

<b>3rd-Order Watershed Numbers</b>	<b>% Watershed Harvested and Roaded 1967-1997</b>					
	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>	<b>Alt. 6</b>
E92A	21	21	27	23	21	27
E94A	62	62	62	62	62	62
H21A	0	4	5	1	5	5
H54A	58	59	59	59	59	59
H60A	9	9	20	20	20	20
H61A	16	32	33	33	33	33
H62A	27	36	42	42	42	42
H63A	41	53	42	54	53	54
<b>2nd-Order Watershed Numbers</b>						
EX7A	0	0	18	18	18	18
EX8A	0	0	20	20	18	20
H59A	8	23	13	22	15	23

SOURCE: GIS, 1997

## Record of Decision

Another measure of potential risk to fish habitat from timber harvest is the associated new road construction and road reconstruction which cross streamcourses (see Chapter 3-Fisheries). During placement of culverts or bridges, sediment may be introduced into the streams which may have short- or long-term effects on water quality. Alternative 2 proposes the fewest stream crossings, while Alternative 6 proposes the most. This is shown in Table ROD-2.

**Table ROD-2**  
**Stream Crossings to be Constructed**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Class I	0	4	6	0	5	9
Class II	0	0	3	0	3	5
Total Crossings	0	4	9	0	8	14

SOURCE: Oien, 1998

Following timber harvest, there is an increased risk of landslides until second growth and the brush layer become firmly established. One way of analyzing this risk is to determine the amount of timber harvest on slopes which have high mass movement index (MMI) soils. This rating does not imply that such a mass-wasting event will occur; rather, it ranks the alternatives on the basis of the potential for a mass-wasting event to occur, which may or may not result in an increase in stream sediment. This increased stream sedimentation may result in some loss or impairment of resident and anadromous fish spawning and rearing habitat. Table ROD-3 displays the proposed harvest on high MMI and very high MMI soils by alternative. Virtually all very high MMI soils have been removed from the timber base. Only those sites that appear to be small inclusions or mistyped have been retained in the unit pool. These sites have been examined by a professional soil scientist as part of unit reconnaissance.

**Table ROD-3**  
**Acres of High Hazard Soils Harvested by Alternative**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
High MMI soils	0	183	466	542	511	727
Very High MMI soils*	0	8	0	6	6	15

SOURCE: Ketchikan Area, GIS

\* See Chapter 3-Soils for details of MMI classification.



Table ROD-4

**Timber Harvest on Slopes Greater than 72% by Harvest Unit and Alternative**

Unit	Alternative				
	2	3	4	5	6
677-302					0.3
677-305					2.2
678-325		1.9	1.9		1.9
678-339					1.2
678-344					0.3
679-467		17.8	17.8	17.8	17.8
679-473	1.7		1.7	1.7	1.7
679-475	21.6		21.6	21.6	21.6
681-363	5.6	5.6			5.6
681-367	1.3	1.3	1.3		1.3
681-368	4.2	4.2	4.2		4.2
681-372	12.8	12.8			12.8
<b>Total Acres</b>	<b>47.2</b>	<b>43.6</b>	<b>48.5</b>	<b>41.1</b>	<b>70.9</b>
Total Acres Project Area Wide					6116.3

Source: TLMP GIS coverage of slopes &gt;72%

Table ROD-4 displays the amount of timber harvest proposed on slopes greater than 72 percent by harvest unit and alternative. The project area contains more than 6,100 acres of which only 71 acres are still included in harvest unit boundaries. A majority of these units with slopes greater than 72 percent have been deleted, but small slivers show up in GIS as being in the unit which really are not. This includes Units 677-302, 677-305, 678-325, 678-339, 678-344, 679-473, 681-367 and 681-368. Unit 679-475 was not included in the preferred alternative because of concerns about the amount of steep slopes. Partial suspension was recommended for Units 679-467 and 681-363 because of erosion potential. These units will be helicopter yarded so full suspension will be achieved. Approximately 13 acres of slopes greater than 72 percent are mapped in Unit 681-372 which has been recommended for partial suspension. This unit will be helicopter yarded so full suspension will be achieved, and in addition, no streams are located within the harvest unit. The cliffs that made this area rate more than 72 percent are located outside of the unit boundary.

## Record of Decision

All watersheds were evaluated for sediment delivery and depositional potential risk assessment (Geier and Loggy, 1995). Sediment transport and deposition indices were developed based upon watershed morphology, discharge, and potential sediment sources. This sediment transfer index indicates where in a watershed sediment production and deposition is a potential problem for maintenance of aquatic habitat. The quantity of sediment transported and deposited depends upon a number of factors, including nature of sediment source, stream discharge, and channel morphology. These are factors that resource managers must consider when they undertake activities on areas that are linked to important aquatic habitat.

A sediment transport and deposition risk assessment was completed for the Cannery Creek watershed. As a result of this analysis all areas of highest risk were removed from the suitable land base. This equated to more than 75% of the watershed. In addition, harvest Units 674-213, 674-265, and 678-301, which are in the Cannery Creek Watershed, have been field checked by soil scientists, fish biologists, foresters, and road engineers for compatibility with Forest standards and guidelines. Fish habitat in Cannery Creek will be protected by a 300-foot no-cut buffer and slope break buffers on Class III streams that enter Cannery Creek. The end result is that none of the proposed harvest activities pose a significant risk to fish habitat and water quality in the Cannery Creek watershed.

**Highlights of the Selected Alternative (3)** include the following:

- Implements the recommendations applicable to project-level planning presented in the Anadromous Fish Habitat Assessment (AFHA) Report.
- Implements 300-foot buffers along important Class I anadromous streams.
- Reduces overall risk by minimizing harvest unit location and road construction near stream courses in high risk watersheds, and proposes a high percentage of units for helicopter harvest.
- Avoids timber harvest on important riparian areas and fens identified as part of the Watershed Analysis. This helps to protect riparian habitat and regulate streamflow.
- Implements the “Alternatives to Clearcutting” study by the FSL.
- Entry into Cannery Creek

### Issue 3

#### Recreation and Scenic Quality

This issue addresses concerns for outdoor recreation and scenic viewing opportunities offered in and around the Chasina Project Area and the effects timber harvest and transportation system development may have upon these opportunities.

The Selected Alternative locates timber harvest within previously unharvested areas and increases development within the existing developed areas. However, the project area contains only a small amount of the total recreation opportunities on the Tongass National Forest, and there are similar recreation opportunities nearby. This shift in recreation opportunities is a minor impact when viewed forest-wide.

All alternatives meet the visual quality objectives as specified from the priority travel routes and their viewsheds. These priority travel routes and key viewsheds include: (1) West Arm Cholmondeley, (2) Sunny Cove, (3) Lancaster Cove, (4) Kitkun Bay, (5) Port Johnson, (6) Moira Sound, and (7) North Arm.

**Highlights of the Selected Alternative (3)** include the following:

- Meets the visual quality objectives as specified from the priority travel routes and their viewsheds.
- The application of 1,000-foot beach, and 300-foot anadromous stream buffers serve to help screen management activities and to protect recreational fisheries use.
- Scattered islands of leave trees will be left in harvest Units 674-213 and 674-265.

**Issue 4****Wildlife Habitat**

Table ROD-5 displays the potential reduction in wildlife habitat capabilities, as estimated by habitat capability models, for the key Management Indicator Species (MIS) found in the Chasina Project Area. This table displays the 1954 long-term habitat capability and estimated short-term reduction in habitat capability after potential implementation of the alternatives.

The major effect on wildlife habitats in all action alternatives is the reduction of old-growth forest habitat. Impacts to other habitats were reduced by the interdisciplinary design of units prior to alternative formulation. All action alternatives result in impacts consistent with the implementation of the Forest Plan and Forest Plan Standards and Guidelines, including the Old-growth Habitat Reserve strategy.

Table ROD-5

**Potential Changes in Habitat Capability Numbers Within the Project Area for MIS in 1998**

Species	Habitat Capability		Changes from 1996 by Alternative					
	1954	1996	1	2	3	4	5	6
Sitka black-tailed deer	2,094	1,753	0	-70	-108	-103	-102	-158
Black bear	86	77	0	-2	-4	-3	-3	-5
Otter	52	52	0	0	0	0	0	0
Marten	97	86	0	-3	-5	-5	-5	-8
Hairy woodpecker	900	890	0	-30	-44	-50	-48	-76
Vancouver Canada goose	242	222	0	-5	-11	-10	-9	-15
Bald eagle	123	121	0	0	0	0	0	0
Brown creeper	1,983	1,947	0	-60	-83	-108	-111	-163
Gray wolf	7	5.8	0	-0.2	-0.4	-0.3	-0.3	-0.7

SOURCE: USDA Forest Service, 1998.

Note: Number do not incorporate patch-size effectiveness calculations (see the Old-Growth/Biodiversity section in Chapter 3).

## Record of Decision

Forest fragmentation represents a change in the overall forest landscape from large, contiguous blocks of old-growth forest to smaller blocks separated by timber harvest units. Increased amounts of forest fragmentation indicate reduced habitat potential for species which are thought to be dependent on interior old-growth forest habitat. One way to analyze forest fragmentation is to measure the reduction of large, contiguous blocks of old-growth forest as a result of timber harvest. Large- and medium-sized blocks of old growth (Nutkwa LUD II area, South Prince of Wales Wilderness Area, and Kitkun Bay) are adjacent to the project area. In addition, the project area contains a significant amount of old-growth habitat in blocks over 1,000 acres in size. Table ROD-6 displays the number of acres of old-growth habitat in large blocks that will remain after implementation of an alternative.

**Table ROD-6**  
**Effect of Timber Harvest on Forest Fragmentation in Acres**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Acres of unfragmented blocks of 101-500 acres remaining after harvest	3,548	3,630	3,241	3,608	3,255	3,567
Acres of unfragmented blocks of 500-1,000 acres remaining after harvest	4,019	3,064	2,637	5,270	5,563	4,414
Acres of unfragmented blocks of >1,000 acres remaining after harvest	14,215	13,828	13,833	10,951	10,991	10,809
Total acres of old growth remaining after harvest	24,178	23,192	22,468	22,559	22,680	21,658

SOURCE: USDA Forest Service 1998.

Note: Old growth includes only Volume Strata 1 and above.

Late successional wildlife travel corridors that provide connectivity between core areas of unfragmented old-growth habitat were analyzed. No timber harvest is proposed under any of the action alternatives that would result in a wildlife travel corridor being less than 1,000 feet wide.

**Highlights of the Selected Alternative (3)** include the following:

- Incorporates the viable population strategy of small, medium, and large old-growth reserves consistent with the VPOP committee recommendations and Forest Plan.
- Enlarges the small old-growth reserve located on Chasina Point.
- Results in relatively few miles of new road construction, most of which are scheduled for closure (administrative or physical).
- The application of 1,000-foot beach buffers, and anadromous stream buffers will also serve to help protect some of the more important wildlife and fish habitat.



## Issue 5

**Subsistence Use**

This issue reflects public concern for the availability of wildlife, marine life, and plants for customary and traditional use by rural Alaska residents. The Alaska National Interest Lands Conservation Act (ANILCA) requires the Forest Service to determine if proposed activities may significantly restrict use of subsistence resources. If such a finding is made, then ANILCA requires public hearings and determinations regarding actions to minimize impacts prior to proceeding with a project.

Chapter 3 of the FEIS evaluates the potential site-specific effects on subsistence that could result from implementing any of the proposed timber harvest and associated road construction alternatives.

The Tongass Resource Use Cooperative Survey (TRUCS) identified areas which are most heavily used by subsistence households. Based on the TRUCS, the project area contains no high or moderate use subsistence areas. High and moderate use is interpreted to mean greater than 50 households ever used the area for subsistence deer hunting.

The project area is located within portions of three Wildlife Analysis Areas (WAAs 1210, 1211 and 1213). The harvest is 80 deer per year based on ADF&G hunter surveys for the complete WAAs. Approximately 13 percent of the original (1954) habitat capability is needed to support this level of deer harvest in the three full WAAs. The habitat capability through the year 2010 is projected to be approximately 89 percent of the original (1954) habitat capability.

Competition for subsistence resources in the project area is an issue identified during scoping. Subsistence users are concerned with competition from residents of Ketchikan. Since Ketchikan residents are considered non-rural, this competition can be regulated under ANILCA if it starts to restrict rural residents' ability to obtain subsistence resources.

The subsistence analysis indicates that the actions proposed in Alternatives 2 through 6 will not represent a significant possibility of a significant restriction on subsistence use of deer, black bear, or otter in the project area. Marten harvest in WAAs 1211 and 1213 is at the peak of the level that can be sustained. Increasing human population coupled with future reductions of habitat capability for wolf and marten could pose a significant possibility of a significant restriction of subsistence use of marten and wolf at some point in the future (next 150 years) for all alternatives including the no action alternative.

The Federal Subsistence Board may use its authority to regulate non-rural harvest of marten and wolf, and has authority to prioritize the harvest among rural residents when necessary to protect the resource.

Deer hunting is one aspect of subsistence use affected by timber harvest. The Wildlife and Subsistence sections of the FEIS Chapter 3 discuss the computer models used to estimate the effects of timber harvest on deer habitat capability, both long range and short range. Based on this analysis, Alternative 1 will cause no reduction of deer habitat capability. Among the action alternatives, Alternative 2 would cause the least reduction to deer habitat capabilities, while Alternative 6 would reduce deer habitat capabilities the most severely within the project area; although all action alternatives result in less than a one percent reduction in current habitat capability for all WAAs.

Table ROD-7 displays the percent of the original (1954) deer habitat capability the WAAs (1210, 1211, and 1213) can support now and in 2010. The full WAA habitat capability has not been reduced for the effects of fragmentation.



Table ROD-7

**Percent of 1954 Deer Habitat Capability for WAAs 1210, 1211, and 1213**

Alternative	Percent of 1954 Habitat Capability		Percent of 1954 Habitat Capability Needed to Meet Current Demand
	1997	2010	1995
1	99	89	13
2	99	89	13
3	99	89	13
4	99	89	13
5	99	89	13
6	99	89	13

SOURCE: Matson, 1998

Note: Habitat capability for entire WAAs has not been reduced for fragmentation.  
Habitat capability assumes the units are in the clearcut stage (0-25 years).  
Habitat capability in 2010 assumes full implementation of the Forest Plan for all alternatives (maximum timber harvest within standard guidelines—no reduction for economic constraints).

There is no evidence to indicate that availability of salmon, finfish, shellfish, or other food resources to subsistence users would be affected by the proposed ROD activities, sport harvest, or non-rural harvest. Any increase in competition from non-rural Alaskan residents and nonresidents would not be substantial because of the availability of resources in the immediate vicinity and in the surrounding areas

**Highlights of the Selected Alternative (3)** include the following:

- Results in relatively few miles of new road construction, most of which is scheduled for closure (administrative or physical).
- The application of 1,000-foot beach buffers, and anadromous stream buffers will also serve to help protect important subsistence use areas.
- The west side of Kitkun has been avoided to protect high value fish and wildlife habitat.
- Stream buffers meet or exceed 11 1997 Standards and Guidelines.
- Is consistent with the Forest Plan Old-growth Habitat Reserve strategy.

## Issue 6

### Caves and Karst

Caves are an important resource of the project area. Due to the mitigation measures incorporated to protect the cave resources in the project area, no alternatives are expected to have effects on any significant cave resources. All units which were identified to be on karst formations were surveyed by the Forest Geologist, Jim Baichtal. Areas of high karst vulnerability were deleted from units, and no roads occur on high karst vulnerability sites. Timber harvest on moderate vulnerability karst lands will protect the resource by utilizing

harvest systems that achieve partial suspension, and roads will avoid sinkholes, other collapsed features, and losing streams.

## Issue 7

### Social and Economic Effects

This issue reflects concern about economic development and employment, and about maintaining Alaskan lifestyles. Social and economic effects are important to the Forest Service in its land management decision-making. Land use designations, scheduling of activities, and rural development program decisions are all made with consideration of social and economic effects.

Implementation of the Selected Alternative authorizes harvest of approximately 42.5 MMBF of timber volume from harvest units, and 0.5 MMBF from road right-of-ways, for a total of 43 MMBF. Additionally, it authorizes new road construction on approximately 16.7 miles of road, and reconstruction of 8.4 miles of existing road. The Selected Alternative provides raw materials to support the local forest products industry. The Selected Alternative could provide, on the average, 62 forest product jobs annually over the next four years.

None of the alternatives are projected to have a measurable effect on income or employment opportunities in the sport or commercial fishing industries or those related economic sectors. No significant impact is expected on employment and income opportunities in the recreation and tourism industry.

I have verified that the harvest levels proposed for the Selected Alternative are consistent with the principles of long-term sustained yield and non-declining even flow. Analysis in Chapter 3 of the FEIS and the Forest Plan indicate that these harvest levels can be sustained over time, assuming economic predictions take place on schedule and the suitable timber base remains relatively constant over time.

### Highlights of the Selected Alternative (3) include the following:

- Produces 42.5 MMBF of economically viable timber to help support the local forest products industry.
- Results in approximately 62 forest products jobs annually over the next four years.
- Funds received by the State of Alaska from the sale of timber on National Forest Lands (25 percent) will continue to contribute funding for local public schools and road maintenance.

## Issue 8

### Marine Environment

Direct effects to the marine environment are assumed to occur only from development and use of LTFs, and are limited to the intertidal area affected by rock fill and either the intertidal or subtidal areas potentially affected by accumulations of bark debris.

A total of three potential LTF locations were considered for possible development. There is one existing LTF site and 2 potential new sites. The maximum number of LTFs that would be utilized under any alternative is two (one new site and one existing site). The final selection of which LTF sites to utilize was based on the interagency guidelines (Alaska Log Transfer Facility Siting, Construction, Operation, and Monitoring/Reporting Guidelines). The U.S. Fish and Wildlife Service (USF&WS) and the National Marine Fisheries Service staff conducted subtidal surveys at the sites that appeared to best meet the interagency guidelines. The subtidal survey reports and recommendations which are included as part of FEIS Appendix E, were used to further define which of the potential LTF locations were preferable. Table ROD-8 displays the LTFs involved in the various alternatives. See also the detailed alternative maps included with the Chasina FEIS.

## Record of Decision

Table ROD-8  
**Log Transfer Facilities Required, by Alternative and System**

Name	Site No.	1	2	3	4	5	6	System
North Arm Moira	4N*	N	N	N	N	N	N	Ramp
West Arm Cholmondeley	*	N	N	I	N	I	I	A-Frame
Lancaster Cove	1	N	I	I	I	I	I	Barge

I = Planned for intermittent use; N = Not planned for use.

\* New Log Transfer Facilities

Table ROD-9 displays the number of LTFs used or developed, the total acreage of the structural embankment, and the estimated acres to be affected by bark deposition. The combination of the marine habitat covered by the structural embankment and the area potentially covered by bark deposition represents the total loss of marine benthic habitat for each alternative.

Table ROD-9  
**Marine Benthic Habitat Affected by Alternative**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Existing LTF Sites	1	1	1	1	1	1
Proposed New LTF Sites	0	0	1	0	1	1
Structural Embankment	0.23	0.23	0.46	0.23	0.46	0.46
Bark Deposition	1.0	1.0	2.0	1.0	2.0	2.0
<b>Total Acres of Marine Benthic Habitat Affected</b>	<b>1.23</b>	<b>1.23</b>	<b>2.46</b>	<b>1.23</b>	<b>2.46</b>	<b>2.46</b>

The no-action alternative and Alternative 2 and 4 would have no measurable additional effect on the marine environment, while Alternatives 3, 5, and 6 affect the marine system (2.46 acres) in a similar fashion. The loss of habitat is much less than one percent of the available marine habitat in the project area. Since all species identified along the subtidal (underwater) survey transects are common throughout Southeast Alaska, it is concluded that there would not be a significant impact to the marine environment from constructing (or continuing to use) LTFs at the proposed sites.

### Highlights of the Selected Alternative (3) include the following:

- The one new LTF (Cannery Creek) will be constructed at the location approved by the USF&WS.
- The Lancaster Cove LTF meets the Alaska Timber Task Force siting guidelines and results in less upland and marine impacts than other potential sites, including a less desirable potential area to the west.
- All LTFs currently have marine dives conducted prior to construction, during use, and periodically following harvest to document and monitor effects on the marine environment.
- The LTF proposed in North Arm Moira has been dropped from consideration; the harvest units will be helicopter yarded.

## Public Involvement

Public involvement has been instrumental in identifying issues, formulating alternatives, and influencing this decision. Public scoping and involvement activities for the Chasina Project Area are listed in Chapter 1 and Appendix K of the FEIS. A summary of the significant issues was provided in a previous section of this ROD and in Chapter 1 of the FEIS. Public comments on the DEIS and Forest Service responses are presented in Appendix K.

## Coordination With Other Agencies

From the time scoping was initiated, meetings and site visits with interested State and Federal agencies have occurred. Issues were discussed and information was exchanged.

Coordination meetings were held with the State of Alaska including the Department of Governmental Coordination, Department of Fish and Game, and the Department of Environmental Conservation between the DEIS and FEIS. Information contained in the DEIS and at subsequent meetings, has been provided to the State of Alaska. The State of Alaska is still in the review process to determine that the activities proposed in the Chasina Project Area are consistent with the ACMP.

A Biological Assessment was prepared and sent to the U.S. Fish and Wildlife Service and to the National Marine Fisheries Service as part of the Section 7 consultation under the Endangered Species Act.

The FEIS identifies the agencies who were informed of and/or involved in the planning process (see List of Agencies, Organizations, and Individuals to Whom Copies of this Statement Were Sent). See also the discussion of subsistence in the section entitled “Findings Required by Law”, later in this ROD.

The Chasina Project is a Category 3 Transition Timber Sale under the Forest Plan. The project fully incorporates all of the new wildlife standards and guidelines and is completely consistent with the Forest Plan. The incorporation of these new measures was reviewed by an interagency implementation team consisting of NMFS, EPA, USF&WS, and pertinent state agencies.



### Alternatives Eliminated From Detailed Consideration

A number of alternatives were examined, but not considered for detailed study in this FEIS. This section summarizes those alternatives and the rationale for not considering them further. For a more complete description of these alternatives, refer to Chapter 2 of the FEIS.

#### Alternative A

##### **Single Resource or Issue**

Alternatives that focused solely upon one resource or issue were eliminated from consideration as implementable alternatives. While alternatives constructed around a single resource may not be implementable, the issue itself may still be significant. Each alternative was evaluated against all the significant issues.

#### Alternative B

##### **Avoid Previously Mapped Old-growth Retention Areas**

Several commenters asked the Forest Service to analyze an alternative that would keep intact all previously mapped old-growth retention during this entry. Under the Forest Plan, 11 out of 16 land use designations (LUDs) preclude or severely restrict timber harvest, including the establishment of old-growth habitat reserves. The standards and guidelines for the remaining LUDs retain unaltered old-growth habitat in beach and TTRA buffers, as well as in unsuitable commercial forest land. Previously mapped old-growth retention areas are consequently considered as part of the tentatively suitable and available timber base, unless otherwise excluded. Approximately 801 acres of retention were established as part of previous project level EISs but no documents could be found which map these areas.

#### Alternative C

##### **Manage the Chasina Project Area for Sustained Yield/Even Flow of Forest Products**

Several commenters asked the Forest Service to analyze an alternative that displayed the real sustainable harvest level when taking into consideration such things as “falldown” and rotation lengths based on site index, not a 100-year rotation age. Although this alternative has not been displayed, the components of this issue are analyzed in the Silviculture and Timber and Socioeconomic sections of Chapter 3 as cumulative impacts.

#### Alternative D

Several public and agency comments requested the Forest Service analyze a reduced harvest within the Chasina Project Area, or select the no-action alternative because of the extensive timber harvest that has occurred on other ownership within the project area. There was no pre-established harvest volume for the project. A wide range of harvest volumes were considered based on issues (including a no-action alternative).



## Alternatives Considered for Detailed Study

Six alternatives for making timber available to local purchasers from the Chasina Project Area were considered in detail. Each alternative is consistent with the Forest Plan). For each alternative this section provides a discussion of: (1) the emphasis or intent of the alternative, and (2) various resource outputs associated with implementation. Alternatives are compared in detail later in this ROD and summarized in Table ROD-10, and in the alternative maps located in ROD Appendix 5.

### Alternative 1 (No Action)

#### Emphasis

The emphasis of this alternative is to propose no new timber harvest from the Chasina Project Area at this time. It does not preclude timber harvest from other areas at this time, or from the Chasina Project Area at some time in the future. The Council of Environmental Quality (CEQ) regulations 40 CFR 1502.14d requires a “No-Action” alternative be analyzed in every EIS. This alternative serves as a benchmark by which effects of the other action alternatives are to be measured. The Existing Condition map shows the distribution of vegetation associated with no new timber harvest.

#### Outputs

There are no new timber harvest outputs associated with this alternative. Visual quality, wildlife habitat quality, recreation opportunities, as well as other resource values would remain at their current condition.

### Alternative 2

#### Emphasis

The emphasis of this alternative is to meet the stated purpose and need while avoiding timber harvest in VCUs 674, 677, 678, and the Kitkun Bay area. These areas contain the largest blocks of high value wildlife habitat in the project area and deferral would avoid any fragmentation of them this entry. Individual unit selection attempted to avoid wildlife travel corridors. This alternative differs from Alternative 3 in that less volume is harvested and units were selected for harvest as to avoid areas identified during scoping as being important or special.

#### Outputs

Alternative 2 schedules the harvest of 26 individual harvest units, totaling 25.6 MMBF of sawlog plus utility volume from 986 acres, indicating an average unit size of 37.9 acres. Of this harvest, 370 acres are planned for partial cut treatments; the remainder are planned for clearcut harvest. This alternative requires the construction of 5.7 miles of new specified roads plus 8.7 miles of reconstruction. Road construction clearing will yield an additional 0.2 MMBF of right-of-way (ROW) volume. This indicates an average of 4.5 MMBF per mile of new road construction. It schedules 711 acres or 19.7 MMBF of volume for helicopter yarding. Preliminary analysis indicates a net mid-market stumpage value of \$-57.85 per MBF.

No new log transfer facilities (LTFs) would be required to implement this alternative. Floating or land based logging camps are anticipated with the Lancaster Cove LTF.

### Alternative 3

#### Emphasis

The emphasis of this alternative is to meet the stated purpose while striking a balance between timber sale economics and other resource values. Helicopter yarding of the Port Johnson Peninsula units and dropping of the proposed LTF in North Arm Moira would occur under this alternative. Timber harvest would not occur in old-growth reserves as designated in the Forest Plan). This alternative would construct a new LTF in West Arm Cholmondeley and enter the Cannery Creek drainage.

## Record of Decision

### Outputs

Alternative 3 schedules the harvest of 51 individual harvest units, totaling 42.5 MMBF of sawlog plus utility volume from 1,710 acres, indicating an average unit size of 32.3 acres. Of this harvest, 666 acres are planned for partial cut treatments; the remainder are planned for clearcut harvest. This alternative requires the construction of 16.7 miles of new specified roads plus 11 miles of reconstruction. Road construction clearing will yield an additional 0.5 MMBF of ROW volume. This indicates an average of 2.5 MMBF per mile of new road construction. It schedules 991 acres or 27.1 MMBF of volume for helicopter yarding. Preliminary analysis indicates a net mid-market stumpage value of \$-43.06 per MBF.

The development of one new LTF and the use of one existing LTF will be required to implement this alternative. Floating or land based logging camps are anticipated with the proposed West Arm Cholmondeley LTF, and the existing Lancaster Cove LTF. The Alternative 3 map provides the spatial relationship among roads, units, and other geographic features of the Chasina Project Area.

## Alternative 4

### Emphasis

The emphasis of this alternative is to harvest the maximum amount of timber while keeping the amount of road construction to a minimum. This alternative looks at helicopter logging several portions of the project area and utilizing barge or small water drop areas (Cannery Creek and Port Johnson Peninsula) instead of constructing logging roads and LTFs. This alternative will display the trade-offs in economics and resource concerns between helicopter logging and conventional cable logging/road building.

### Outputs

Implementation of this alternative would schedule the harvest of 1,619 acres in 41 harvest units for approximately 45.4 MMBF of sawlog and utility volume, indicating an average unit size of 39.5 acres. Of this harvest, 751 acres are planned for partial cut treatments; the remainder are planned for clearcut harvest. To implement this level of harvest, 3.2 miles of new road would be constructed, and 8.7 miles of existing road would require reconstruction. Road construction clearing will yield an additional 0.1 MMBF of ROW volume. This indicates an average of 14.2 MMBF per mile of new road construction. It schedules 1,240 acres or 34 MMBF of volume for helicopter yarding. Preliminary analysis indicates a net mid-market stumpage value of \$-64.98 per MBF.

No new LTFs would be required to implement this alternative. Floating or land-based logging camps are anticipated with the Lancaster Cove LTF.

## Alternative 5

### Emphasis

The objective of this alternative is to emphasize timber economics and conventional cable yarding methods. The location of harvest units, selection of silvicultural prescriptions, logging systems, and a transportation network is primarily based on maximizing the mid-market value. This entry proposes only limited helicopter timber harvest. This approach emphasizes a positive net economic return for the proposed harvest units, by avoiding the low and very low economic zones to the extent possible. Areas eliminated for potential timber harvest as a result of the Forest Plan affected the amount of volume and economics of this alternative.

### Outputs

Alternative 5 schedules the harvest of 38 individual harvest units, totaling 37.6 MMBF of sawlog and utility volume from 1,498 acres, indicating an average unit size of 39.4 acres. Of this harvest, 795 acres are planned for partial cut; the remainder are planned for clearcut harvest. This alternative requires the construction of 13.5 miles of new specified roads plus 8.7 miles of reconstruction. Road construction clearing will yield an additional 0.4 MMBF of right-of-way ROW volume. This indicates an average of 2.8 MMBF per mile of new road

construction. It schedules 851 acres or 22.6 MMBF of volume for helicopter yarding. Preliminary analysis indicates a net mid-market stumpage value of \$-67.11 per MBF.

The development of one new LTF and the use of one existing LTF will be required to implement this alternative. Floating or land based logging camps are anticipated with the West Arm Cholmondeley and Lancaster Cove LTFs. The Alternative 5 map provides the spatial relationship among roads, units, and other geographic features of the Chasina Project Area.

### Alternative 6

#### Emphasis

The emphasis of this alternative is to accelerate progress toward the desired future condition for timber management while meeting Forest Plan Standards and Guidelines for other resources. Timber volume made available to local timber purchasers is maximized this entry under this alternative. This alternative is designed to evaluate the effects of harvesting as much of the project area as possible in a combination that still meets standards and guidelines. This alternative serves as an upper level benchmark that can be used to project the cumulative effects of the reasonably foreseeable future activities (see Appendix A) within the project area. Another feature of this alternative is that it looks at the maximum amount of road that could be constructed.

#### Outputs

Implementation of this alternative would schedule the harvest of 2,520 acres, in 75 harvest units for approximately 66.7 MMBF of sawlog and utility volume, indicating an average unit size of 33 acres. Of this harvest, 1,013 acres are planned for partial cut treatment; the remainder are planned for clearcut harvest. To implement this level of harvest, 31 miles of new road would be constructed, and 8.7 miles of existing road would require reconstruction. Road construction clearing will yield an additional 1.1 MMBF ROW volume. This indicates an average of 2.2 MMBF per mile of new road construction. It schedules 1,322 acres or 35.5 MMBF of volume for helicopter yarding. Preliminary analysis indicates a net mid-market stumpage value of \$-42.96 per MBF.

The development of one new LTF and the use of one existing LTF will be required to implement this alternative. Floating or land based logging camps are anticipated with the West Arm Cholmondeley and Lancaster Cove LTFs. The Alternative 6 map provides the spatial relationship among roads, units, and other geographic features of the Chasina Project Area.



# Record of Decision

**Table ROD-10**  
**Summary Comparison of Alternatives**

Activity/Resource	Units	Alternatives					
		1	2	3	4	5	6
<b>Timber</b>							
Units	Number	0	26	51	41	38	75
Estimated harvest unit volume	MMBF	0	25.6	42.5	45.4	37.6	66.7
Estimated right-of-way (ROW) volume	MMBF	0	0.2	0.5	0.1	0.4	1.1
Uneven-aged partial cuts (diameter limits, group selections)	Acres	0	370	666	751	795	1,013
Clearcut harvest	Acres	0	616	1,044	868	703	1,507
Total harvest	Acres	0	986	1,710	1,619	1,498	2,520
Units over 100 acres	Number	0	0	0	0	0	0
Shovel harvest	MMBF	0	0	0.5	0	0.5	0.5
Running Skyline	MMBF	0	6	13.6	12.1	12.5	24.8
Live skyline (Shotgun)	MMBF	0	0	1.9	0	1.9	3.5
Slackline harvest	MMBF	0	1.3	1.2	0.9	1.7	4.2
Helicopter harvest	MMBF	0	19.7	27.1	34.0	22.6	35.5
Estimated stumpage (mid-market rates)	\$ / MBF	0	-57.85	-43.06	-64.98	-67.11	-42.96
Estimated stumpage (current rates)	\$ / MBF	0	+138.93	+153.72	+131.80	+129.67	+153.82
Receipts to State of Alaska	\$M	0	903	1,653	1,483	1,232	2,615
Average annual jobs over 4 years	# of jobs	0	39	62	67	56	98
<b>Roads and Transportation</b>							
Specified road construction	Miles	0	5.7	16.7	3.2	13.5	31.0
Road reconstruction	Miles	0	8.7	8.4	8.7	8.7	8.7
Temporary road construction	Miles	0	1.2	2.7	1.7	1.9	3.3
New log transfer facilities (LTFs)	Each	0	0	1	0	1	1
Reconstruction/Use of existing LTFs	Each	0	1	1	1	1	1
Roads crossing Class I or II streams	Number	0	4	9	0	8	14
<b>Biodiversity</b>							
Unfragmented old-growth patches remaining							
1,000 acres and larger	Acres	14,215	13,828	13,833	10,951	10,991	10,809
500-1,000 acres	Acres	4,019	3,064	2,637	5,270	5,563	4,414
100-500 acres	Acres	3,548	3,630	3,241	3,608	3,255	3,567
Nutkwa old-growth habitat - large block	Acres Harvested	0	0	0	0	0	0
Kitkun Bay old-growth habitat - medium block	Acres Harvested	0	0	0	0	0	0
Corridors connecting old-growth blocks	Affected	N/A	No	No	No	No	No
Productive old-growth acres remaining in project area	Acres	24,178	23,192	22,468	22,559	22,680	21,658
Percent of existing old growth remaining	Percent	100	96	93	93	94	90
<b>Wildlife - Project Area</b>							
1998 MIS - deer	Habitat Capability	1,753	1,683	1,645	1,650	1,651	1,595
1998 MIS - bear	Habitat Capability	77	75	73	74	74	72
1998 MIS - marten	Habitat Capability	86	83	81	81	81	78
1998 MIS - river otter	Habitat Capability	52	52	52	52	52	52
1998 MIS - hairy woodpecker	Habitat Capability	890	860	846	840	842	814
1998 MIS - Vancouver Canada goose	Habitat Capability	222	217	211	210	213	207
1998 MIS - bald eagle	Habitat Capability	121	121	121	121	121	121
1998 MIS - brown creeper	Habitat Capability	1,947	1,887	1,864	1,839	1,836	1,784
1998 MIS - gray wolf	Habitat Capability	5.8	5.6	5.4	5.5	5.5	5.1

Table ROD-10 (cont.)

## Summary Comparison of Alternatives

Activity/Resource	Units	Alternatives					
		1	2	3	4	5	6
Subsistence - WAAs 1210, 1211, and 1213							
High and moderate use subsistence (TRUCS)	Acres Harvested	0	0	0	0	0	0
Deer habitat capability	Habitat Capability	5,118	5,048	5,010	5,015	5,016	4,960
Deer population needed to support current harvest	Habitat Capability	800	800	800	800	800	800
Significant Possibility of a Significant Restriction							
Deer	Response	No	No	No	No	No	No
Bear	Response	No	No	No	No	No	No
Furbearers	Response	Yes	Yes	Yes	Yes	Yes	Yes
Salmon	Response	No	No	No	No	No	No
Other Finfish	Response	No	No	No	No	No	No
Waterfowl	Response	No	No	No	No	No	No
Marine Mammals	Response	No	No	No	No	No	No
Indirect and cumulative effects of implementing the Forest Plan over the entire rotation							
	Response	May	May	May	May	May	May
Cultural Resources							
Impacts to known cultural resources	Each	0	0	0	0	0	0
Floodplains and Wetlands							
Proposed harvest on floodplain soils	Acres	0	12	15	7	10	15
Proposed roading on floodplain soils	Acres	0	0	0	0	0	0
Proposed harvest on vegetated wetlands	Acres	0	236	856	556	707	939
Proposed roading on vegetated wetlands	Acres	0	70	177	44	70	312
Soils and Geology							
Proposed harvest on very high MMI soils	Acres	0	8	0	6	6	15
Proposed roading on very high MMI soils	Acres	0	0	0	0	0	0
Proposed harvest on high MMI soils	Acres	0	183	466	542	511	726
Proposed roading on high MMI soils	Acres	0	4	45	4	45	81
Proposed harvest on moderate MMI soils	Acres	0	338	783	771	622	1,125
Proposed roading on moderate MMI soils	Acres	0	16	74	32	48	138
Proposed harvest on low MMI soils	Acres	0	377	402	289	366	593
Proposed roading on low MMI soils	Acres	0	50	57	9	47	75
Proposed harvest on slopes >72 %	Acres	0	47	44	49	41	71
Projected soil disturbance by harvest	Acres	0	28	73	38	39	128
Projected soil disturbance by roads	Acres	0	70	177	44	140	312
Harvest on High Karst Vulnerability	Acres	0	0	0	0	0	0
Harvest on Medium Karst Vulnerability	Acres	0	92	169	307	197	338
Visual Quality							
Meets or Exceeds Proposed Visual Quality Objectives							
West Arm Cholmondeley Sound	Response	Exceeds	Exceeds	Meets	Exceeds	Meets	Meets
Sunny Cove	Response	Exceeds	Exceeds	Meets	Meets	Meets	Meets
Lancaster Cove	Response	Exceeds	Meets	Exceeds	Meets	Meets	Meets
Kitkun Bay	Response	Exceeds	Exceeds	Exceeds	Exceeds	Exceeds	Exceeds
Port Johnson	Response	Exceeds	Meets	Meets	Meets	Exceeds	Meets
Moria Sound	Response	Exceeds	Exceeds	Exceeds	Meets	Exceeds	Meets
North Arm	Response	Exceeds	Exceeds	Meets	Meets	Exceeds	Meets
Recreation							
Change in ROS class from P & SPNM to RM	Percent	0	8	42	34	31	100
Roadless areas	Acres	25,600	23,500	12,100	11,300	15,200	3,600
Recreation sites with change in ROS	Number	0	1	7	3	6	7



# Record of Decision

## Environmentally Preferred Alternative

There is no single factor that can be used to determine which alternative is environmentally preferred. Maintaining the basic productivity of the land and the quality of lifestyle of the local residents are vitally important.

Alternative 1, the no-action/no further harvest alternative, would cause the least environmental disturbance and is therefore the environmentally preferred alternative. This is based on the comparison of all the alternatives shown in Table ROD-10 and as displayed in Chapter 2 of the FEIS.

All alternatives considered in detail have varying levels of environmental effects depending on what issue is addressed. Alternatives 2 and 4 would cause the least adverse environmental effects of the action alternatives. These alternatives have significantly less effects for most resources due to building less road and crossing fewer large streams.

## Administrative Record

The Administrative Record for this project includes the Draft EIS, Final EIS, Forest Plan, Alaska Regional Guide, and all material incorporated by reference including the planning record. The planning record is available for review at the Craig Ranger District.

## Mitigation

Mitigation measures are prescribed to avoid, reduce, minimize, or eliminate the adverse effects of actions. These measures were applied in the development of the project alternatives, including the Selected Alternative, and in the design of the harvest units and road corridors. The Mitigation Measures section of Chapter 2 of the FEIS discusses the mitigation measures for all alternatives.

Mitigation measures applicable to the Selected Alternative include those contained in the Standards and Guidelines of the Forest Plan, Alaska Regional Guide, and applicable Forest Service Manuals and Handbooks. The ROD Appendices 2 and 3 include Unit Design and Road Cards which incorporate site-specific mitigation and are adopted as part of this decision. Integrated silvicultural prescriptions will be developed which will further specify mitigation direction for each unit.

All practical measures have been adopted to avoid or minimize adverse environmental effects of the Selected Alternative. Measures have been included to protect, enhance, and restore resources affected by timber harvest and related actions. The Forest Service has the authority, through the timber sale contract and other permit requirements or authorities, to enforce and implement adopted mitigation measures and monitoring necessary to ensure the effectiveness of the mitigation. The following mitigation measures are authorized for application to the Chasina Project Area.

## Water Quality, Fish Habitat, and Wetlands

Mitigation to protect water quality, fish habitat, and wetlands includes application of the Best Management Practices (BMPs) stated in the Soil and Water Conservation Handbook (USDA FSH 2509.22). This handbook provides standard operating procedures for all stream classes. In addition, the Forest Plan requires specific buffers for all Class I, II and III streams. The width of this buffer strip may be greater than 100 feet for reasons such as topography, riparian soils, a windfirm boundary, timber stand boundaries, logging system requirements, and varying stream channel locations. Split yarding or full suspension was built into the logging and transportation design process, as was partial and full suspension over wetland soils or soils with a higher mass movement potential. Direct in stream impacts are minimized through road construction timing and fish passage requirements on certain Class I and II streams. Refer to ROD Appendices 2 and 3 (Unit Design and Road Cards) for the rationale for the unit-specific stream buffering, suspension, passage, and timing requirements being applied.

Application of BMPs and adherence to the TTRA requirements will protect water quality fish habitat and wetlands as well as riparian habitat important to other species such as deer, bear, and furbearers.

### **Anadromous Fish Habitat**

Most Class I anadromous streams will receive a minimum 300-foot no-cut buffer. Where practical, roads, tail holds, and guy-circles will be located outside this stream buffer.

### **Beach Fringe and Estuaries**

Beach fringe areas will receive a 1,000-foot no-cut buffers. When practical, roads, tailholds, and guy-circles will be located outside these buffers.

### **Temperature Sensitive Streams**

Required buffers will mitigate most temperature sensitivity concerns. Class III streams that flow through harvest units will receive slope break buffers and a windfirm buffer if needed. Following completion of the watershed analysis, buffers were placed on streams as needed to meet water quality objectives including water temperature.

### **Cavity and Snag-dependent Wildlife**

Mitigation measures will provide habitat requirements for cavity and snag-dependent wildlife species by retaining reserve trees within all land use designations. To provide for adequate distribution of snags within VCUs which have marginal numbers of snags, the following units will have small 0.1 acre (or larger) snag patches distributed throughout the unit at a rate of 0.1 acre per 10 acres of unit. The location of these snag patches will be determined during layout or sale administration, and will be designed in such a fashion as to not impose undue safety hazards on logging contractors.

Guidelines for placement of snag patches and old-growth islands include:

- Areas where wildlife use is concentrated (determined during reconnaissance).
- Selected areas should be at least 100 feet away from unit boundary (unless the unit boundary is an existing second-growth stand; then the patch or island can be placed along the unit boundary).
- Patches or islands can be placed along split yard sections of harvest units, particularly split yard streams.
- Snag patches or old-growth islands can be incorporated into stream buffers.
- Snag patches or old-growth islands can be placed along boundaries of muskegs.

FEIS Units 679-392 and 680-330 will employ these snag recruitment techniques.

## Record of Decision

### Wildlife Travel Corridors

Important travel corridors have been identified for the project area. Harvest units that occur in these corridors are recommended for partial harvest to maintain forest structure to lessen impact to wildlife mitigation and dispersal. The following units will receive a type of partial harvest:

678-303	679-447
679-378	679-467
679-382	679-470
679-409	679-479
679-425	681-363
679-437	

### Goshawks

Region 10 goshawk management guidelines in effect at the time of unit release will be followed. Goshawk guidelines in the Forest Plan call for maintaining the following conditions:

**Nest Stand**—Maintain an area of at least 25 acres around the confirmed nest tree (and probable nest tree if identified) and attempt to include prey handling areas, perches, and roosts. Vegetative structure objectives generally include a multi-layered, closed (over 60 percent) forest canopy, a relatively open understory, with large trees (usually greater than 20 inches DBH) and low ground vegetation. These structural characteristics generally equate to Volume Class 5 and higher in the timber resource inventory.

**Management**—No vegetative manipulation or new road construction is permitted. Existing roads may be maintained. Permit no continuous disturbance likely to result in nest abandonment within the surrounding 600 feet from March 15 to August 15. Activity restrictions are removed for active nests that become inactive or unsuccessful.

**Nesting Habitat**—Maintain an area of not less than 75 acres surrounding the nest stand (total management of 100 acres). Include inactive nest stands, hiding cover, and foraging opportunities for young goshawks. Vegetative structure is similar to the nest stand but may include some intermediate canopy (e.g. Volume Class 4).

**Management**—No commercial timber harvest is permitted within the nesting habitat. New road construction is permitted (outside the nest stand) if no other reasonable roading alternatives outside the mapped nesting habitat exist.

All new nests discovered during field reconnaissance or unit layout will be protected by implementing the above measures or the Region 10 goshawk management guidelines in effect at the time of unit release.

### Marbled Murrelets

Due to the limited information available on nesting habitat requirements of marbled murrelets, any nests located during field reconnaissance or unit layout will be assessed on a case-by-case basis.

A 600-foot, generally circular, radius of undisturbed forest habitat surrounding identified murrelet nests will be maintained. Disturbance activities within this buffer will be minimized during the nesting season (May 1 to August 15). The buffer zone will be maintained and the site monitored for nesting activity for not less than two nesting seasons after nest discovery. The buffer protection may be removed if the site remains inactive for two or more consecutive nesting seasons.



## Bald Eagle Nests

Road construction activities that are within a half mile of bald eagle nests will usually have blasting restricted to the period of September 1 to February 28. If the nest is unoccupied, normal blasting procedures are also permitted from June 1 to August 31, if there is no direct danger to eagles, nests, eagle nest trees, or other eagle habitat elements. Blasting within one-half mile of an active eagle nest is only allowed if: (1) the blasting can be accomplished in accordance with the requirements of the Bald Eagle Protection Act, (2) written coordination with the U.S. Fish and Wildlife Service has occurred, and (3) the results of the interagency coordination is documented. Harvest units within one-half mile of eagle nests with road construction include:

678-312	679-409	681-363
679-367	679-382	681-365
679-379	680-330	

Also, as part of the Interagency Agreement between the U.S. Fish and Wildlife Service and the Forest Service, the Forest Service agrees to not have repeated helicopter flights within one-quarter mile of active eagle nests. The only harvest unit within one-quarter mile of an eagle nest that is being considered for helicopter harvest is 681-363. However, helicopter drop zones in Port Johnson and Cannery Creek areas need to take eagle nest locations into consideration, because there could be some conflicts.

## Whale Habitats

The following Forest-wide standards and guidelines have been developed for application on all Forest Service permitted or approved activities and have been incorporated by reference into the Chasina FEIS from the Forest Plan:

- Provide for the protection and maintenance of whale habitats.
- Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, and porpoise.

## Marine Mammals

Forest-wide standards and guidelines direct the Forest Service to prevent and/or reduce potential harassment of sea lions and other marine mammals due to activities carried out by or under the jurisdiction of the Forest Service. These have been incorporated by reference into the Chasina FEIS from the Forest Plan. These Forest-wide standards and guidelines to provide for protection and maintenance of harbor seal, Steller sea lion, and sea otter habitats are as follows:

1. Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act and the Endangered Species Act.
2. Locate facilities and concentrated human activities requiring Forest Service approval as far from known marine mammal haulouts, rookeries, and known concentration areas as practicable. The following distances are provided as general guidelines for maintaining habitats and reducing human disturbance:
  - Facilities, camps, LTFs, campgrounds and other developments should be located one mile from known haulouts and farther if the development is large.
  - Individuals associated with Forest Service permitted or approved activities will not intentionally approach within 100 yards, or otherwise intentionally disturb or displace any hauled-out marine mammal.

## Record of Decision

Several harbor seal haulout areas have been identified near the project area. They include:

- west side of little island in South Arm
- rocks east of Cannery Creek
- rocks southwest of Lancaster Cove

### **Waterfowl**

The standards and guidelines for waterfowl from the Forest Plan are incorporated by reference into the Chasina FEIS. Significant waterfowl areas include Kitkun Bay estuary and North Arm Moira Sound. These habitats will be maintained through the protection of the 1,000-foot estuary buffer. Activities are located as far from these areas as feasible.

### **Vancouver Canada Geese**

Vancouver Canada goose habitat found during unit layout will be protected with a 410-foot buffer where management activities will be avoided, if possible, when the geese are present for nesting or brood rearing activities.

### **Heron and Raptor Nest Protection**

- Any active heron rookeries or raptor nests will be protected with a 600-foot windfirm buffer of old-growth habitat. Disturbance will be minimized during the active nesting season (generally March 1 to July 31) on a case by case basis.
- The nests will be monitored annually for two years after discovery of the active nest. If the nest remains inactive for two consecutive years, protection measures for the site will be removed.

### **Alexander Archipelago Wolf**

- A 600-foot windfirm buffer will be maintained around active wolf dens. Road construction within the buffer will be discouraged and alternate routes explored.
- The den will be monitored for at least two consecutive years and if the den becomes inactive, then buffer restrictions can be removed.

### **Subsistence**

Because most subsistence use involves harvesting fish and game, mitigation measures that protect or enhance fish and game resources will also protect and enhance subsistence activities. By placing units and roads away from beach and estuary fringe habitats, and away from salmon bearing streams, mitigation measures were built into each of the alternatives considered in the FEIS. Road management objectives (closures) were also heavily influenced by the desire of subsistence hunters to limit access.

### **Scenic Quality**

Effects of timber harvest on views from anchorages and known recreational day use areas have been reduced by leaving buffers of timber along the beaches and inland lakes. The visual quality objectives for this plan emphasize the protection of the visual resource as viewed from saltwater, particularly in North Arm Moira Sound. Protecting these viewsheds will reduce the direct effects on visual quality. Stream riparian buffers will protect fisheries habitat and sport anglers use of Class I and II streams in the project area.

### **North Arm Moira, Recreation**

Effects of timber harvest on views from anchorages and known recreation sites will be reduced by leaving buffers of timber along the beaches and inland lakes. The proposed visual quality objectives for this plan emphasize the protection of the visual resource as viewed from saltwater, particularly in North Arm of Moira Sound. Protecting these viewsheds will reduce



the direct effects on visual quality. Stream riparian buffers will protect fisheries habitat and sport angler's use of Class I and II streams in the project area

### **Cultural Resources**

Potential effects on cultural resources have been minimized by excluding project activities from most high probability areas (exceptions are LTFs, camps, a small number of units, and most access roads to these facilities). The high probability areas were all surveyed in 1995 and 1996, except for exact road locations which cannot be precisely determined until after unit and road layout occurs. Types of mitigation measures include avoidance, protective enclosures, monitoring of harvest activities, restrictions on size or road location, and recovery and documentation of materials.

### **Sensitive Plants**

Choris bog orchid (*Platanthera chorisana*) is a designated sensitive species. Nine populations of this species were discovered in muskeg openings during botanical surveys of the project area conducted in 1995 and 1996. Populations were found within the vicinity of FEIS Units 677-311; 679-363, 407 and 414. The primary risk of perturbation to these populations will be through road construction activities. Road locations have been adjusted to avoid direct impacts to known locations of Choris bog orchid. Harvest Unit 677-311 has been dropped from all alternatives.

### **Fisheries**

Mitigation measures will design stream crossings to provide fish passage for anadromous and resident fishes. This applies to proposed new road construction or major road reconstruction crossing Class I and II streams. (See ROD Appendices 2 and 3, Unit Design and Road Cards.)

Measures will also time road construction activities within all Class I and some Class II streamcourses to protect spawning adult fish and their eggs and fry from disturbance. This means instream road construction activities must be conducted during time periods that would not cause reductions in egg or fry survival or disturb spawning adults. Generally road construction activities adjacent to streams will be restricted to the time period May 15 to August 15.

Split yarding or full suspension of logs on all identified streamcourses that require additional protection will maintain streambank stability and prevent stream sedimentation.

### **Soils**

Mitigation measures will reduce the potential for landslides by providing for full bench road construction and end haul of waste in areas with very high potential for mass movement, as well as in other areas as determined by geotechnical engineers.

Another means of reducing the landslide potential is to maintain partial log suspension on all slopes with high mass movement potential. Ground disturbance should not exceed 10 percent.

### **Log Transfer Facilities**

For National Forest permitted LTFs, the grade of the working surface shall be constructed to back drain water away from the working face toward filter strips or collection/settling basins. Clean up of bark and debris will occur on a frequent basis in accordance with the necessary EPA permits.

### Regeneration

It is desirable to maintain the cedar component in stands where it naturally occurs. Because cedar tends to regenerate poorly following clearcut harvest in some stands, it is desirable to not harvest the mature cedar but to retain that vegetative structure for biodiversity and to establish cedar regeneration. Silvicultural methods such as seed tree or shelterwood harvest are appropriate to meet specific resource objectives. Areas identified to be best suited for cedar regeneration include units within the cedar or mixed conifer plant association that are proposed for helicopter yarding and have either elevations over 1,200 feet (on north and east aspects) or over 1,500 feet (on south and west aspects). Specific units or parts of units identified as meeting this criteria include approximately 90 acres in FEIS Units 678-319, and 325; 679-361, 378, 382, 413, and 414; and 680-310 and 330.

Problems establishing adequate natural regeneration because of aspect or indigenous plant association may be mitigated by supplemental hand planting. Hand planting will be done on approximately 90 acres or as necessary within units identified in FEIS Appendix H to insure regeneration within five years after timber harvest as required under NFMA.

### Caves/Karst

There are known occurrences of carbonate rock and associated cave resources within the project area. Field reconnaissance has identified where most of the resources occur. Cave/karst mitigation measures in the Forest Plan Standards and Guidelines will be applied.

## Monitoring and Enforcement

A monitoring program is the process by which the Forest Service can evaluate whether or not the resource management objectives of the FEIS have been implemented as specified and whether or not the steps identified for mitigating the environmental effects were effective. Three levels of monitoring are recognized. The first level or implementation monitoring is generally feasible at the project level. The second level or effectiveness monitoring is generally conducted on an Area-wide basis, however some project specific effectiveness monitoring is occasionally conducted to address specific needs (see FEIS Chapter 2 - Monitoring). The third level, validation monitoring, is conducted at the Regional or Forest-wide level.

One major objective of this strategy is to do initial implementation and effectiveness monitoring of Forest Service BMPs. The Tongass National Forest is currently developing a BMP monitoring strategy and action plan to achieve this objective. BMP monitoring in the Chasina Project Area will follow the general guidelines outlined in this action plan. BMPs to be monitored at a specific site are determined through a review of unit/road cards, fish habitat reports, and other appropriate documentation.

Applicable monitoring requirements are specified at the end of Chapter 2 of the FEIS. For each monitoring item, an objective, desired result, method of measurement, and evaluation (or threshold and corrective action) are identified, along with identification of the responsible staff. Monitoring activities may reveal results that deviate from planned effects, in which case corrective actions are prescribed.

The Ketchikan Area Forest Supervisor is responsible for ensuring that project implementation, mitigation, monitoring, and enforcement is accomplished as specified.

## National Forest Management Act

# Findings Required By Law

The National Forest Management Act (NFMA) requires specific determinations in this Record of Decision including consistency with existing Forest Plans and Regional Guides. It also requires a determination of clearcutting as the optimal method of harvesting and specific authorization of clearcuts over 100 acres in size.

This decision is consistent with the Alaska Regional Guide and the Forest Plan. I have reviewed the management direction, standards and guidelines, and the schedule of activities for the VCUs included in the Selected Alternative, and find the Selected Alternative to be consistent with these elements. The areas of undisturbed old-growth wildlife habitat maintained in this alternative exceed the standards established in the Forest Plan.

The activities authorized in this decision are consistent to the extent practicable with the standards and guidelines and management prescriptions of the Forest Plan.

### Clearcutting as the Optimal Method of Harvesting

The Alaska Regional Guide established silvicultural and management standards for the western hemlock-Sitka spruce forest type (Alaska Regional Guide, page 3-18). Even-aged management in the form of clearcutting is, according to the Regional Guide, to be used where (1) the management objective is to meet timber production objectives established in the Forest Plan, (2) where there is a risk of dwarf mistletoe infestation, and (3) where risk of windthrow is determined to be high. Harvest units in the Selected Alternative are within LUD IV lands and have a moderate to high risk of windthrow. Many units in the Selected Alternative are prescribed for clearcut harvest. Clearcutting of these harvest units will meet the objective of maintaining fast-growing, mistletoe-free stands of mixed species and is the optimum method of harvesting, considering the following factors referenced in the Alaska Regional Guide:

1. The thin bark and shallow roots of hemlock and spruce make them particularly susceptible to logging injury, which leads to decay. Losses from decay fungi are high, especially in the old-growth forests of Alaska. Conversion from old- to young-growth by clearcutting has the greatest potential for reducing decay.
2. Hemlock dwarf mistletoe, *Arcanthobium tsugense*, a common disease of western hemlock, can best be controlled by clearcutting. Elimination of residual overstory trees infected with dwarf mistletoe prevents infestation of western hemlock in the new stand.
3. Exposure to the sun raises soil temperature, which speeds decomposition, thereby improving the productivity of most sites.
4. Clearcutting favors regeneration of Sitka spruce by destroying advance hemlock regeneration and by creating more favorable conditions for post-logging reproduction of spruce.
5. Risk of blowdown in residual stands is eliminated. The chance of blowdown along cutting boundaries is increased but can be reduced through proper design of cutting units.
6. Natural seed fall is generally adequate for regeneration and most young stands are dense.
7. Logging costs are lower than with other systems.

On June 4, 1992, F. Dale Robertson, former Chief of the Forest Service, issued a letter to Regional Foresters and Station Directors on the subject of Ecosystem Management of the National Forests and Grasslands. As part of this letter, an attachment was included regarding



## Record of Decision

clearcutting on National Forest System lands and the use of other silvicultural systems. Specific items are listed which describe circumstances where clearcutting is appropriate. Within the FEIS for Chasina, a discussion of alternatives considered is displayed. Where clearcutting is specified as the preferred regeneration harvest, documentation is provided for the reasons clearcutting is appropriate, and reference is made to the appropriate items in the Chief Robertson's letter which apply. Considering these factors, clearcutting, as applied in the Selected Alternative is appropriate and consistent with the criteria in the letter.

### **Tongass Timber Reform Act**

Harvest units were designed and will be located to maintain a minimum 100-foot buffer zone for all Class I streams and Class II streams which flow directly into Class I streams as required in Section 103 of the TTRA. As discussed previously in the Mitigation section of this ROD, the actual widths of these buffer strips will often be greater than the 100-foot minimum. The design and implementation direction for the Selected Alternative incorporate BMPs for protection of all stream classes.

### **Endangered Species Act**

Actions authorized in the Selected Alternative are not anticipated to have a direct, indirect, or cumulative affect on any threatened, endangered, or sensitive species in the Chasina Project Area. A complete biological assessment is included in Appendix D of the FEIS. I have determined that this action will not have any adverse impacts on any threatened or endangered species.

### **Bald Eagle Protection Act**

Management activities within 330 feet of an eagle nest site are restricted by a Interagency Agreement between the Forest Service and the U. S. Fish and Wildlife Service to facilitate compliance with the Bald Eagle Protection Act. The Selected Alternative includes no road construction within 330 feet of a known bald eagle nest.

### **Clean Water Act**

The design of harvest units and roads for the Selected Alternative were guided by standards, guidelines, and direction contained in the Forest Plan, Alaska Regional Guide, and applicable Forest Service manuals and handbooks. The ROD Appendices 2 and 3, Unit Design and Road Cards, contain specific details on practices prescribed to prevent or reduce non-point sediment sources. Reasonable implementation with site-specific application and monitoring of approved BMPs is expected to comply with applicable State Water Quality Standards Regulations. These regulations provide for variances from anti-degradation requirements and water quality criteria. The harvest and road-building operators will be responsible for compliance, including obtaining any variance required by the State, and will be monitored for compliance by the Forest Service. The Forest Service expects Chasina Project Area activities will fully qualify for any variance required by the State, according to the criteria in 18 AAC 70.015.

A monitoring plan to detect and evaluate possible effects of bark accumulations, oil sheens, and surface runoff will be implemented as a part of permitting processes for log transfer facilities (BMP 14.4, FSH 2509.22).

### **National Historic Preservation Act**

Cultural resource surveys of various intensities have been conducted in the project area. The State Historical Preservation Officer has been consulted, and the provisions of 36 CFR part 800 are being complied with. Forest Service timber sale contracts contain enforceable measures for protecting any undiscovered cultural resource that might be encountered during sale operations. No ground-disturbing activities associated with this action will occur before a cultural resource clearance for a specific area has been given. I have determined, consistent with the Forest Service direction on cultural resources, that there will be no significant effects on cultural resources. We have completed the Section 106 review for all timber harvest related activities displayed in the FEIS. This includes roads, units, and LTFs in all alternatives.

## Federal Cave Resource Protection Act of 1988

## ANILCA Section 810

The actions in the Selected Alternative are not expected to have a direct, indirect, or cumulative effect on any significant cave in the Chasina Project Area. Cave resources have been documented in the project area. The Forest Geologist has field checked units with karst concerns, deleting areas that were high vulnerability. Implementation of cave and karst standards and guidelines is anticipated to protect these resources.

### Subsistence Evaluation and Findings

A subsistence evaluation was conducted for the five action alternatives considered in detail for the proposed action in accordance with ANILCA Section 810. Open houses followed by ANILCA Section 810 hearings were held in Hydaburg and Saxman. The results from the subsistence hearings were incorporated into the development of the Selected Alternative.

The evaluation of comments from the public, subsistence hearing testimony, and additional analysis indicates that the potential foreseeable effects from the action alternatives in the Chasina Project Area do not indicate a significant possibility of a significant restriction of subsistence uses for bear, deer, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods such as berries and roots.

The analysis does conclude that there is a significant possibility of a significant restriction on subsistence use of marten and wolf in the project area. Implementation of the Selected Alternative by itself does not present a significant possibility of a significant restriction to subsistence use of marten and wolf. The effects of the Selected Alternative on the subsistence use of marten and wolf are minimal, with a reduction in habitat capability within the project area of less than 5 percent. However, there is a significant possibility of a significant restriction when the Selected Alternative together with other past, present, and future actions are considered in a cumulative manner. This restriction exists regardless of which alternative is implemented, including the FEIS No-action Alternative. This restriction would be a result of (1) a decrease in habitat capability that could decrease the abundance or distribution, (2) high mortality during severe winters that occur periodically, (3) average yearly harvest levels exceeding what appears to be sustainable harvest levels, and (4) anticipated human population growth with its associated increase in subsistence hunter/trapper demand when compared to the habitat capability to produce marten and wolf.

### Subsistence Determinations

Section 810 of ANILCA requires that when a use, occupancy, or disposition of public lands would significantly restrict subsistence uses, determinations must be made that (1) the significant restriction of subsistence uses is necessary, consistent with sound management of public lands, (2) the proposed activity involves the minimum amount of public lands necessary, and (3) reasonable steps will be taken to minimize adverse impacts on subsistence uses and subsistence resources resulting from the action.

### Necessary, Consistent with Sound Management of Public Land

The Selected Alternative has been examined to determine whether the associated potential restriction to subsistence use is necessary, consistent with the sound management of public lands. Standards used for the review included: (1) the Multiple Use Sustained Yield Act of 1960; (2) the National Forest Management Act (NFMA) of 1976 and its implementing regulations; (3) the Alaska National Interest Lands Conservation Act (ANILCA) of 1980; (4) the Alaska Regional Guide (1983); (5) the Tongass Land Management Plan of 1997; (6) the Tongass Timber Reform Act (TTRA) of 1990; (7) the Alaska State Forest Practices Act; (8) the Alaska Coastal Zone Management Program; (9) Subsistence Management and Use Handbook (1985); and (10) Subsistence Evaluation and Finding (FSH 2609.25).

ANILCA placed an emphasis on the maintenance of subsistence resources and life-styles. However, the Act also provided for adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people, and recognized public lands necessary and appropriate for more intensive uses. The Act also required the Forest Service to make



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available for harvest 4.5 billion board feet of timber per decade from the Tongass National Forest. The TTRA removed the 4.5 billion board foot requirement from ANILCA, but directed the Forest Service to seek to meet market demand for timber to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, and subject to applicable law.

The Selected Alternative is necessary as a component of the timber management program designed to implement the Forest Plan, and meet TTRA direction. There is currently a limited timber supply from other sources, and an under-utilized mill capacity in the region. The Selected Alternative provides the most volume to contribute to the Forest Service's actions to seek and meet market demand while providing for other resources and uses. This volume serves as a component of the ten year timber sale schedule which attempts to provide timber to industry in an even timber sale flow over the planning cycle. The timber volume is also a substantial component of the timber sale program to be offered in the next five years on the Ketchikan Area to meet annual market demand. Timber volume from other areas of the Tongass National Forest is not available to replace this volume in a reasonable time frame.

Of the action alternatives, the Selected Alternative best meets the objectives of the Forest Plan and TTRA for timber harvests while also providing protection measures for forest resources. It is consistent with the Forest Plan, laws, regulations, policies, public needs, and the capabilities of the land.

Based on a review of the subsistence hearing testimony and the analysis conducted in the FEIS, it is apparent that all of the action alternatives involve some potential impact to subsistence wolf and marten use in the future. There is no alternative that would meet Forest Plan and TTRA objectives and yet avoid a significant possibility of a subsistence restriction somewhere in the Tongass National Forest. Therefore, based on the analysis of the information presented in the FEIS and this ROD, it is my determination that the Selected Alternative is necessary, consistent with sound management of public lands and strikes the best balance between meeting the needs of the public and protecting forest resources.

### **Amount of Land Necessary to Accomplish the Purpose of the Proposed Action**

The amount of public land involved to implement the Selected Alternative is (considering sound multiple-use management of public lands) the minimum necessary. The Chasina Project Area was selected to become part of the timber sale schedule because it is designated as a multiple use area that permits timber harvest in the Forest Plan. The Forest Plan assigned a land use designation (LUD) of timber production to approximately 69 percent of the Chasina Project Area. This designation provides for intensive resource use and development with an emphasis on commodity resources such as timber.

The Selected Alternative will utilize an existing LTF site (which requires reconstruction) and construction of a new LTF in West Arm Cholmondeley Sound. The Selected Alternative also provides a sound location and design for all harvest units and roads. The minimum amount of land and roading was used to resolve resource concerns while meeting the purpose and need for the project in a practical and efficient manner. The Selected Alternative harvests less than 7 percent of the commercial forest land in the project area. Resources were protected to the maximum extent practicable.

Choosing an alternative other than the Selected Alternative (including the No-action Alternative) or locating the harvest in another location on the Ketchikan Area would not avoid or substantially lessen the risk to subsistence use in the future. The total deer habitat capability within the project area, projected into the future, is only expected to be reduced by less than 5 percent by harvest from the Selected Alternative when compared to the No-action Alternative. The risk to subsistence use in the future is primarily a result of (1) a decrease in habitat capability that could decrease the abundance or distribution of deer, (2) average yearly deer harvest levels exceeding what appears to be sustainable harvest levels, and (3)

anticipated human population growth with its associated increase in subsistence hunter demand when compared to the habitat capability to produce deer. These effects are independent of the Chasina Project.

Most of the Tongass National Forest is used by one or more rural communities for subsistence purposes for deer hunting (TLMP 1997-Community Deer Harvest Map). The areas of most subsistence use are the areas adjacent to existing road systems, beaches, and the areas in close proximity to the communities. Much effort was taken to protect the highest value subsistence areas. For example, beach fringe is one of the most highly used subsistence areas and there is no timber harvest planned in the beach fringe by the Selected Alternative.

Management activities can not completely avoid these subsistence areas due to their location and broad extent across the Forest. Areas other than subsistence use areas that could be harvested may be limited by other resource concerns such as soil and water protection, high-value wildlife habitat, economics, scenic quality, or unit and road design. The impact of viable timber harvest projects always includes the alteration of old-growth habitat which reduces habitat capability for old-growth dependent species.

It is not possible to lessen harvest in one area and concentrate it in another without impacting one or more rural communities important subsistence use areas. In addition, harvestable populations of game species could not be maintained in a natural distribution across the Forest if harvest was concentrated in specific areas. A well-distributed population of species is also required by the Forest Service regulations implementing the NFMA.

Therefore; it is my determination that the Selected Alternative involves the minimum amount of public land necessary and strikes the best balance between meeting the needs of the public and protecting the forest resources.

### **Reasonable Steps to Minimize Adverse Impacts Upon Subsistence Uses and Resources**

Considerable steps were taken to minimize the impacts to subsistence use and resources. The Selected Alternative reflects special efforts by the Forest Service to minimize the effects on resources used for subsistence by those rural communities that would be most likely to receive the highest priority in the event of an ANILCA section 804 "Tier II" restriction. Most areas of high value are historic beach fringe and stream buffers which are the areas of traditional use. The affect of the Selected Alternative on subsistence use of deer by the rural communities is minimal. The Selected Alternative maintains enough deer habitat capability to meet current and projected demand at least out to the year 2040.

Another significant subsistence resource in the project area is salmon. Fish habitat is protected in the Selected Alternative through the application of the BMPs and stream buffers. In addition to protecting fish habitat these buffers also protect estuarine and riparian habitat important to other species such as plants, deer, bear, and furbearers.

The Selected Alternative reflects a reasonable balance between projected need for Tongass timber from the project area to help meet the Forest Plan, ANILCA, and TTRA timber related employment objectives, and continued protection of subsistence uses and resources. Impacts on subsistence have been minimized through the development of the individual harvest units and road corridors, and through the formulation of the alternatives.

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The FEIS and this ROD describe the mitigation measures that will be implemented as a part of the Selected Alternative. Most of the mitigation measures are designed to maintain fish and wildlife habitat productivity at the highest level possible, while still maintaining a supply of timber.

A significant possibility of a significant restriction on the subsistence use of marten and wolf in the project area is expected when the Selected Alternative together with other past, present, and reasonably foreseeable actions are considered in a cumulative manner. This restriction would be a result of (1) a decrease in habitat capability that could decrease the abundance or distribution, (2) average yearly harvest levels exceeding what appears to be sustainable harvest levels, and (3) anticipated human population growth with its associated increase in subsistence hunter demand when compared to the habitat capability.

It is my determination that reasonable measures to minimize impacts on subsistence have been adopted to the maximum extent practicable while still meeting the purpose and need for this project.

### Executive Orders

#### Executive Order 11988

Executive Order 11988 directs Federal agencies to take action to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. The numerous streams in the Chasina Project Area make it impossible to avoid all floodplains during timber harvest and road construction. The design of the proposed developments and the application of Best Management Practices combine to minimize adverse impacts on floodplains.

#### Executive Order 11990

Executive Order 11990 requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands. The Selected Alternative avoids most identified wetlands; however, many small wetlands or muskegs occur as inclusions within forested areas. These areas may be altered by timber harvest or road construction. Techniques and practices required by the Forest Service serve to maintain the wetland attributes including values and functions. It is estimated there will be only minimal loss of wetlands with any of the alternatives. Soil moisture regimes and vegetation on some wetlands may be altered in some cases; however, these altered acres would still be classified as wetlands and function as wetlands in the ecosystem.

#### Executive Order 12898

Executive Order 12898, issued in 1994, ordered Federal agencies to identify and address the issue of environmental justice, i.e. adverse human health and environmental effects of agency programs that disproportionately impact minority and low income populations. Public scoping, subsistence hearings and the analysis in the Subsistence section of the EIS all contribute to satisfy meeting this executive order.

#### Executive Order 12962

Executive Order 12962 requires Federal agencies to evaluate the effects of proposed activities on aquatic systems and recreational fisheries. The Selected Alternative attempts to minimize the effects upon aquatic systems through project design, watershed analysis, application of Forest Plan Standards and Guidelines, BMPs, and site specific mitigation measures. Recreational fishing opportunities will remain essentially the same because (1) aquatic habitats are protected to the extent practicable, and (2) the isolated road system, far from the nearest town, is unlikely to result in increased opportunities.

### Coastal Zone Management Act

The Coastal Zone Management Act of 1972 (CZMA), as amended, while specifically excluding Federal lands from the coastal zone, requires that a Federal agency's activities be consistent with the enforceable policies of a state's coastal management program to the maximum extent practicable when that agency's activities affect the coastal zone. Standards



against which the consistency evaluation take place are: Alaska Statute Title 46, Water, Air, Energy, and Environmental Conservation; Alaska Forest Practices Act of 1990; and the District Coastal Management Program.

The Alaska Coastal Management Plan incorporated the Alaska Forest Resources and Practices Act of 1979 (as revised) as the applied standards and guidelines for timber harvesting and processing. The Forest Service standards and guidelines, BMPs, and mitigation measures described in Chapter 2 of the FEIS are fully consistent with the State Standards.

Based on the analysis in the FEIS, review of the Alaska Forest Practices Act, and comments from the City of Ketchikan and State agencies on the DEIS, the action and activities are consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Plan.

The standards and guidelines for timber management activities in the Chasina Project Area meet or exceed those indicated in the Alaska Forest Practices Act and the Alaska Coastal Management Program (ACMP).

I have determined that the proposed activities are consistent with the Alaska Coastal Management Program to the maximum extent practicable. The State of Alaska is in the process of reviewing my finding in order to give their concurrence.

Federal and State permits necessary to implement the authorized activities are listed at the end of Chapter 1 of the FEIS.

### Federal and State Permits

## Implementation Process

Implementation of this decision may occur no sooner than 30 days after the date of publication of the Notice of Availability of the FEIS in the Federal Register, or 52 days following publication of the legal notice of the decision in the Ketchikan Daily News, published in Ketchikan, Alaska, whichever is later.

This project will be implemented in accordance with Forest Service Manual and Handbook direction for Timber Sale Project Implementation in FSM 2431.3 and FSH 2409.24. This direction provides a bridge between project planning and implementation and will ensure execution of the actions, environmental standards, and mitigations approved by this decision, and compliance with the TTRA and other laws.

Implementation of all activities authorized by this Record of Decision will be monitored to ensure that they are carried out as planned and described in the FEIS and ROD Appendices 2 and 3, Unit Design and Road Cards, unless modified consistent with direction in the FSM 2432.3 and FSH 2409.18 .

Unit Design and Road Cards are contained in ROD Appendices 2 and 3. These cards are an integral part of this decision because they document the specific resource concerns, management objectives, and mitigation measures to govern the layout of the harvest units and construction of roads. These cards will be used during the implementation process to assure that all aspects of the project are implemented within applicable standards and guidelines and that resource impacts will not be greater than those described in the FEIS. Similar cards will be used to document any changes to the planned layout, as the actual layout and harvest of the



units occurs with project implementation. The implementation record for this project will display each harvest unit, transportation facility, and other project components as actually implemented; any proposed changes to the design, location, standards, and guidelines, or other mitigation measures for the project; and the decisions on the proposed changes.

## Process for Change During Implementation

Proposed changes to the authorized project actions will be subject to the requirements of the National Environmental Policy Act (NEPA), the National Forest Management Act of 1976 (NFMA), Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), the Tongass Timber Reform Act (TTRA), the Coastal Zone Management Act (CZMA), and other laws concerning such changes.

In determining whether and what kind of further NEPA action is required, the Forest Supervisor will consider the criteria for whether to supplement an existing Environmental Impact Statement (EIS) in 40 CFR 1502.9(c) and FSH 1909.15, sec. 18, and in particular, whether the proposed change is a substantial change to the intent of the Selected Alternative as planned and already approved, and whether the change is relevant to environmental concerns. Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. Cumulative impacts will be considered.

The intent of field verification is to confirm inventory data and to determine the feasibility and general design and location of a unit or road, not to locate the final boundaries or road locations. Minor changes are expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging system efficiency. This will usually entail adjusting the boundary to coincide with logical logging setting boundaries. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws. Some minor changes may still require appropriate analysis and documentation to comply with FSH 1909.15, sec. 18.

## Right To Appeal

This decision is subject to administrative appeal. Organizations or members of the general public may appeal this decision according to Title 36 Code of Federal Regulations (CFR) Part 215. The appeal must be filed within 45 days of the date that legal notification of this decision is published in the Ketchikan Daily News, the official newspaper of record. The Notice of Appeal must be filed with:

Phil Janik, Regional Forester  
Forest Service  
U.S. Department of Agriculture  
P.O. Box 21628  
Juneau, Alaska 99802-1628

It is the responsibility of those who appeal a decision to provide the Regional Forester sufficient narrative evidence and argument to show why the decision by the Forest Supervisor should be changed or reversed. At a minimum, the written notice of appeal must:

1. State that the document is a Notice of Appeal filed pursuant to 36 CFR part 215;
2. List the name, address, and, if possible, a telephone number of appellant;
3. Identify the decision document by title and subject, date of the decision, and name and title of the Responsible Official;
4. Identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects;
5. State how the Responsible Official's decision fails to consider comments previously provided, either before or during the comment period specified in 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation, or policy.

The first timber offering is planned to be made available as part of the current timber supply in 1998.

### Contact Person

For additional information concerning the specific activities authorized with this decision contact the Ketchikan Area, Craig Ranger District, Project Manager.

Norm Matson  
Project Manager  
Ketchikan Area, Tongass National Forest  
Craig Ranger District  
900 Main St.  
Craig, Alaska 99921  
(907) 826-3271



BRADLEY E. POWELL  
Forest Supervisor, Ketchikan Area  
Tongass National Forest

April 27, 1998

Date

# **Appendix 1**

## **Units Approved for Harvest**



# Introduction

The purpose of this study is to investigate the effects of various factors on the growth and development of the human body. The study will focus on the relationship between nutrition, exercise, and overall health.

CHASINA ROD UNIT LIST										
VCU	Unit	Acres	AC.@ 10	VOL. 15	PER 20	ACRE (MBF)				PLANNED CUT VOL.
674	213	51					20	31		1660
674	265	25					25			675
678	301	14							14	630
678	303	18				6		12		522
678	310	26							26	1202
678	312	30					30			802
678	316	33						33		1188
678	319	9				9				214
678	324	10				10				225
678	325	17		8		9				310
679	361	31		15	16					518
679	363	66				66				1212
679	367	39				39				236
679	378	29			14	15				586
679	379	4				4				95
679	382	42		42						600
679	383	7		7						95
679	384	14		14						210
679	386	19		10		9				375
679	392	49							49	2205
679	409	80				40		40		1800
679	413	13		13						156
679	414	37		37						527
679	425	42					42			1134
679	433	62						62		2232
679	437E	65				65				1151
679	437W	47				47				833
679	441	46				46				690
679	446	6						6		240
679	447	79						79		3002
679	450	64				19		45		2161
679	467	54						54		2052
679	470	15				15				300
679	477	35						35		0
679	479	18						18		684
679	497	21					11	10		694
680	310	27	21			6				342
680	317	28	13			15				465
680	330	28		28						378
680	333	52				52				1170
681	304	52	22	22	8					639
681	308	3	3							30
681	363	31						31		1178
681	365	7				7				175
681	367	16		16						215
681	368	96				49	47			2503
681	372	23				13		10		653
681	373	21					21			630
681	376	19			19					380
682	301	54					25	29		1719
682	302	36				20	16			982
TOTAL		1710	59	212	57	561	237	495	89	42675 *

\* Volumes may vary due to rounding of volumes.



# **Appendix 2**

## **Unit Design Cards**



# Appendix 3

## Unit Development Chart

## Acronymns and Symbols Used on Unit Cards

A or AC	acre
AHMU	aquatic habitat management unit
B/W or B&W	blue/white
BDRY	boundary
BMP	Best Management Practice
CC	clearcut
CMT	culturally modified tree
CRG	Craig
DBH	diameter at breast height
DF	directional falling
E	east
ELEV	elevation
FS	full suspension
G/W or G&W	green/white
GS	group selection
GIS	geographic information system
HE	helicopter yarding
KTN	Ketchikan
MBF	thousand board feet
MGMT	management
MMI	mass movement index
MOD	moderate
MOU	memorandum of understanding
N	north
O/W or O&W	orange/white
OSR	overstory removal
PC	partial cut
PCT	precommercial thinning
PS	partial suspension
PVT	private
RS	running skyline
RSDEIS	Revised Supplement to the Draft EIS TLMP
S	south
SH	shovel yarding
SILVI	silviculture
SL	slack line
SY	split yarding
TES	threatened/endangered/sensitive species
TLMP	Tongass Land Management Plan
TPA	trees per acre
TTRA	Tongass Timber Reform Act
VCU	value comparison unit
W	west
YC	yellowcedar

# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 674-213 ACRES: 51 VOL: 1830 MBF ALTERNATIVES: 3,5,6

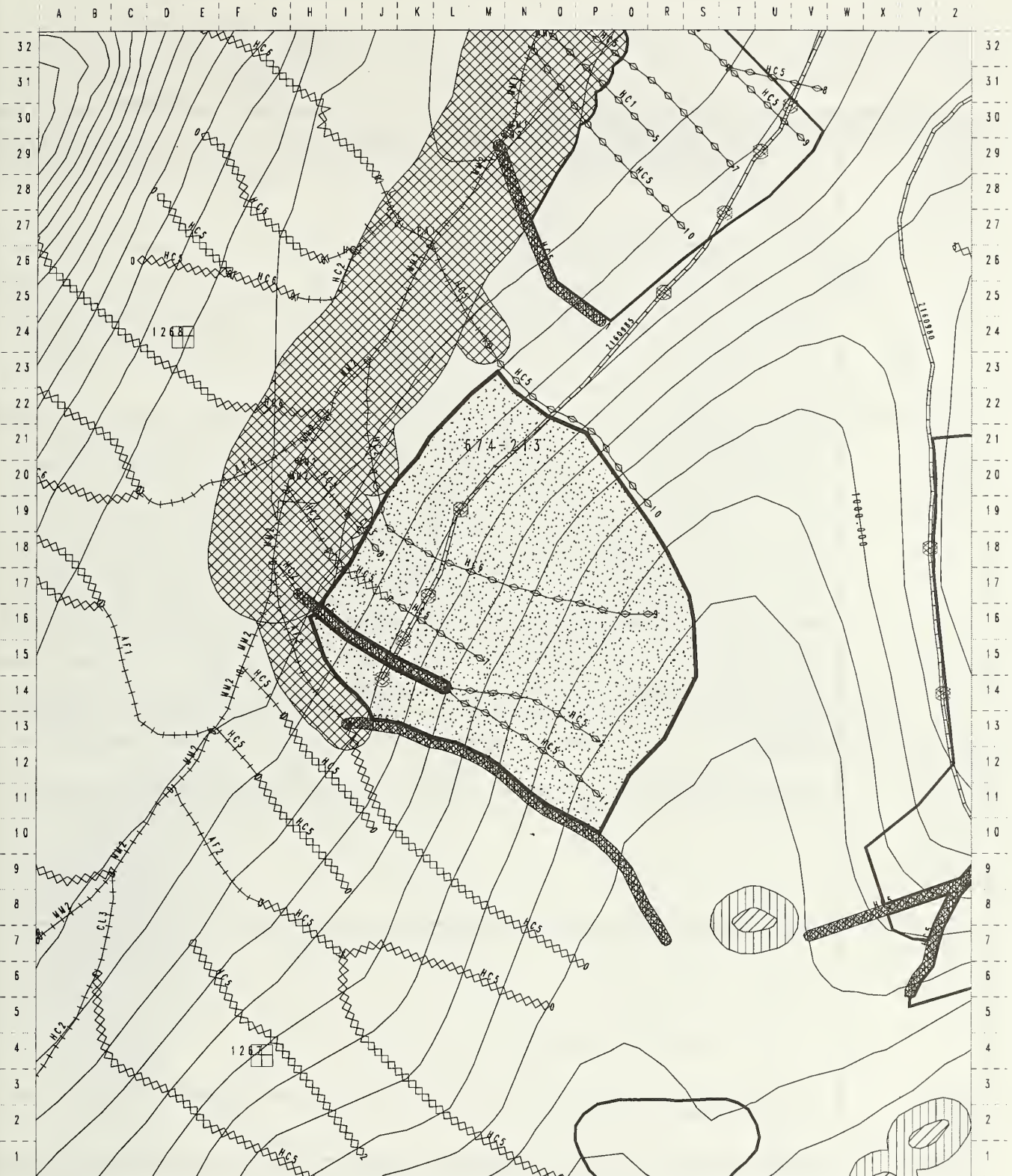
PHOTO YR/#: '91-590-65,64 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: SL,RS,HEL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67404-009 Windthrow potential is high. Productivity of site is high. Difficult terrain - potential blind leads in lower portion. Verify feasibility and modify unit bdry as required. Profiles needed. Midslope and/or upperslope road need verification. Unit has been expanded to the east and north (leave setting between units). Dropped lower portion due to blind leads and buffer. Avoid unstable chutes. Split-yarding required on stream. Suspension requirements (see soils or fish). Buffers (see fisheries). Unit changed to provide proportionality of volume classes.
	ROADS:
R.Johnson 8/04/95	SOILS/WATERSHED: Place lower boundary above 310' elevation to protect riparian and floodplain (BMPs 12.6, 12.6a, 12.4). Elevation is that measured in the field, but may not correspond to that shown on the unit map. Recommend partial suspension for MMI3, small areas of MMI4 too small to delete and a few areas with slopes >75% (BMP 13.5, 13.9). Third order watershed (H21A). Probable blowdown of slope break plus 25' buffer prescribed by fisheries on upper portion of stream #3. Recommend instead only a slope break buffer (BMP 13.16). Additional information filed in the reconnaissance folder.
K. McCartney, J. Hannon, 6/30/95 K.McCartney, M. Solomon, S. Deck, B. Johnston 6/28/96	FISHERIES: Cannery Creek is a Class I and II blue/ white TTRA that requires a 300' buffer (BMP 12.6). Stream 1 is a class IV green/ white. Stream 2 is a class IV green/white; below the junction with stream 1, stream 2 is a class III orange/white. Stream 2 is 6 feet wide, has 8 feet of incision, and an average gradient of 57%. Stream 2 requires a slope break buffer. Near its confluence with Cannery creek, stream 3 is a class II blue/white that will require a 120' TTRA buffer (BMP 12.6). Above this, stream 3 was originally classified as a class III orange/white under the old definition, under the new TLMP (1997) standards it is now a class IV orange/ white. Stream 3 is 4 feet wide, has 3 feet of incision and a gradient of 9%. A slope break buffer is required for stream 3. Stream 7 is a class IV green/white; below 750' of elevation stream 7 was classified as a class III orange/white under the old stream classification system, under the new TLMP (1997) standards it is a class IV orange/white because stream 7 is 2 feet wide, has 3 feet of incision, and an average gradient of 35%. Stream 7 is flagged orange/ white to provide additional resource protection. Stream 8 was classified as a class III orange/white under the old stream classification system, under the new TLMP (1997) standards stream 8 is a class IV orange/ white because it is 3 feet wide, has 2 feet of incision, and an average gradient of 25%. Stream 8 is flagged orange/ white to provide additional resource protection. Below the unit stream 8 is a class II blue/white TTRA stream. Stream 9 was classified as a class III orange/white under the old stream classification system, under the new TLMP (1997) standards stream 9 is a class IV green/ white because it is 2 feet wide, has 10 feet of incision, and an average gradient of 58%. Stream 9 is flagged orange/ white to provide additional resource protection. Stream 10 was classified as a class III orange/white under the old stream classification system, under the new TLMP (1997) standards stream 10 is classified as a class IV orange/ white because stream 10 is 3 feet wide, has 3 feet of incision, and an average gradient of 7%. Stream 10 is flagged orange/ white to provide additional resource protection. The orange/white streams require directional falling, split yarding or full suspension, and immediate cleaning of introduced debris from the channel (BMP 13.16). The green and white streams require directional falling, and split yarding (where practical) or partial suspension. Clean green/ white streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, M.Pacheco, J. Wrate 6/20/95 B.Johnston 6/28/96	WILDLIFE:  Deer forage and sign seen throughout. Bear sign also common. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/28/96 Prolific deer and bear sign at beaver ponds along SW edge of unit. Deer bones along stream.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.  LANDS:
T.Fifield 10/28/97	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.
J.Short 12/17/97	VISUALS: To meet modification VQO(upper), retain about 6 randomly scattered 1 acre islands along the backline of the unit and along the SW boundary of the unit to soften the pronounced edge created by these boundaries.
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of volume. Use: type D clear-cut. This applies to bottom 2/3 of unit and is cable logged. Slackline above and running skyline below road. Upper 1/3 of unit is helicopter logged and is partial cut for VQOs in the form of four retention patches across the top of the unit to feather the visuals. The streams could be used as the retention strips. Layout as windfirm as possible. Retention trees could be less than 18" DBH. PCT in 15 years. Road closure after sale. Actual acres cut of partial cut area is 1/3 to 1/2. Option to helicopter log if road is infeasible. Cannery Creek is major salmon producer. Monitor regeneration at high elevation.



# Chosina Study Area Interim Layout NOI Unit 674-213 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |                       |                            |                                      |                    |
|-----------------------|----------------------------|--------------------------------------|--------------------|
| Class 1 Stream        | Saltwater                  | No Cut Stream Buffers                | Proposed Landings  |
| Class 2 Stream        | Fresh Water Lake           | Variable Width No Cut Stream Buffers | Existing Temp Road |
| Class 3 Stream        | 1000' No Cut Beech Buffers | Variable Width No Cut Karst Buffers  | Proposed Temp Road |
| Class 4 Stream        | No Cut Lake Buffers        | Alternative To Clearcutting Units    |                    |
| Existing Roads        | Partial Cut Lake Buffers   |                                      |                    |
| Proposed Roads        |                            |                                      |                    |
| Unit Boundary         |                            |                                      |                    |
| Susp/Yarding Boundary |                            |                                      |                    |





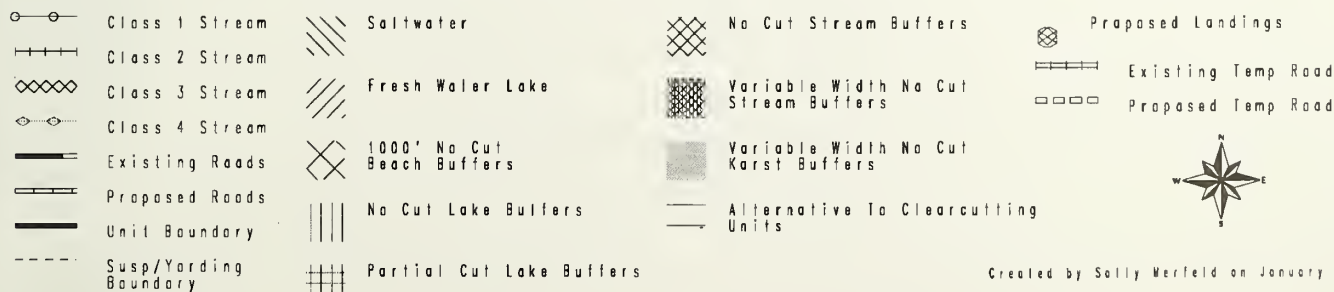
# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 674-265      ACRES: 25      VOL: 675      MBF      ALTERNATIVES: 3,5,6

PHOTO YR/#: '91-590-65      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: SL, HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67404-009. Productivity of site is moderate, moderate windthrow risk, difficult terrain - potential blind leads in lower portion. Profiles needed. Avoid unstable chutes. Buffers (see fisheries); Class III buffers for retention needs. Unit has adequate buffer at bottom. Upper road and upper 1/2 of unit dropped for very high MMI soils already. Interior streams down-classed to IV
	ROADS: No concerns.
R.J 8/04/95	SOILS/WATERSHED: Place lower boundary above a line from 260' elevation in the southwest corner to 200' in the northwest corner to protect riparian and floodplain (BMPs 12.6, 12.6a 12.4). Upper boundary is an irregular line between 500' and 600' elevation (BMP 13.9; TLMP 1997). Elevations were measured in the field and may not correspond to those shown on the unit map. Recommend partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1997). Recommend O & W protection for upper portions of streams in unit because of MMI4 and unstable side slopes (BMP 13.5, 13.16). Third order watershed (H21A). Additional information filed in the reconnaissance folder.
K.Buckley, K.Kitchel 6/28/96	FISHERIES: Require a 300' TTRA buffer on Cannery Creek (BMP 12.6). NOTE: Stream 8 is flagged class II orange/white at its confluence with Cannery Creek; it should be flagged class II blue/white and requires a 120' TTRA buffer (BMP 13.16). At 180' elevation stream 8 changes to a class III orange/white. Stream 8 was classified as a class III orange/white under the old stream classification system, under the new TLMP (1997) standards stream 8 is a class IV orange/ white because it is 3 feet wide has 7 feet of incision and 15% gradient. Stream 8 is flagged orange/ white to provide additional resource protection. At an elevation of 260', stream 8 changes to a class IV green/white. Stream 9 is a class IV green/white. Stream 7 was classified as a class III orange/ white under the old stream classification system, under the new TLMP (1997) standards stream 7 is a class IV orange/ white. Stream 7 is 3 feet wide has 7 feet of incision and 15% gradient. Stream 7 is flagged orange/ white to provide additional resource protection. Stream 5 was classified as a class III orange/ white under the old stream classification system, under the new TLMP (1997) standards stream 5 is a class IV orange/ white. Stream 5 is 3 feet wide has 3 feet of incision and 10% gradient. Stream 5 is flagged orange/ white to provide additional resource protection. Stream 10 was classified as a class III orange/white under the old stream classification system, under the new TLMP (1997) standards stream 10 is a class IV orange/ white. Stream 10 is 2 feet wide has 3 feet of incision and 20 %gradient. Stream 10 is flagged orange/ white to provide additional resource protection. Stream 11 is a class III orange/white Stream 11 is 10 feet wide has 13 feet of incision and 37% gradient. Stream 11 requires a slope break buffer. The orange/white streams require directional felling and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/white streams require directional felling and split yarding (where practical) or partial suspension (BMP 13.16).
D.Parker, M.Pacheco, J.Wrate 6/20/95 C.Tighe, B.Johnston 6/28/96	WILDLIFE:  Deer forage throughout unit. Deer and bear sign seen throughout unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/28/96 Lots of bear sign in NW part of unit.
T.Fifield, J.Short 5/96. J.Baichtal	GEOLOGY/MINERALS: Unit visited by Forest Geologist. No known geology minerals, or karst resources concerns.  LANDS:  CULTURAL: This unit will be surveyed in 1996.
J.Short 12/17/97	VISUALS: To meet modification VQO retain about 5 randomly scattered 1 acre islands along the backline of the unit to soften the pronounced edge created by this boundary.
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe on lower 3/4 of unit. Retain 3-4 one acre leave patches on upper end of unit for meeting VQOs. Place these between landings and above road. Consider windthrow risk. Use: type B clear-cut. Meet suspension requirements (see soils). PCT at 20 years. Close road after yarding. Option to helicopter log if road is infeasible.

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 678-301      ACRES: 14      VOL: 630      MBF      ALTERNATIVES: 3,5,6

PHOTO YR/#: '91-590-65      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67404-009, low windthrow risk, portion downhill yarded. Productivity of site is high. Option to extend unit uphill to meet road for uphill yarding potential. Buffers (see fisheries). Leave setting between adjacent unit. Suspension requirements (see soils or fish). Unit changed to provide proportionality of volume classes.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 32D and 32E (StNicholas 35-75%). Partial suspension for MM13 and forested wetland (BMPs 12.5, 13.9). Third order watershed H21A. Field review may be needed during layout to determine if unsuitable conditions exist in the steep portion of the unit (BMPs 13.2, 13.5)
D. Kuntzsch, M. Becker, 9/7/95	FISHERIES: Stream 1 is a class III orange/ white that requires a slope break plus 25' buffer (BMP 12.6). Stream 2 is a class IV green/ white. Stream 3 is a class IV green/white. The green and white streams require directional falling, and split yarding (where practical) or partial over. Clean stream of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
C.Tighe, J. Wrate, J.Baichtal 6/12/95 B.Johnston, G.Lawton 5/23/96	WILDLIFE:  Deer sign within unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/23/96 -Great-horned owl heard in unit. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Sinking karst stream along NW unit boundary. Pull back unit boundary to protect water quality.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Future setting to southwest and northeast. PCT at 15. Monitor potential poor regeneration.

# Chosina Study Area Interim Layout NO1 Unit 678-301 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 678-303      ACRES:18      VOL: 522      MBF      ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-20      1/4 QUAD: CRG A-1   NW 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67802-019, low windthrow risk, minor portion downhill yarded. Productivity of site is high. Buffers (see fisheries). KARST POTENTIAL. Retain stand structure for wildlife where feasible.
J. Oien 5/96	ROADS: Because of karst development within the unit, road construction should minimize the clearing size and disturbance during construction. Road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to the alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be approved by both the Forest Geologist and the District Fisheries Staff.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 32D (StNicholas 35-60%) and 87CD (Grindall - StNicholas 5-60%). Partial suspension for MM13 and forested wetlands (BMPs 13.9, 12.5). More rugged topography than mapped in the NE and W portions of the unit, could be confusion with map unit 29EF (McGilvery). Possible field review needed during layout for McGilvery soils and slopes >72% (BMPs 13.2, 13.5; TLMP 1997). A second order watershed EX7A.
J. Hannon, M. Becker, 6/26/95	FISHERIES: Stream 1 is a class I blue/white that requires a 150' TTRA buffer due to steep slopes (BMP 12.6). Stream 2 is a class I blue/white that requires a 120' TTRA buffer (BMP 12.6). The road will require fish passage and timing (BMP 14.14). Karst present. 1000' beach buffer required.
C.Tighe, J.Wrate 6/12/95. C.Tighe, B.Johnston, A. Mueller 5/24/96	WILDLIFE:  This unit has been identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Lots of blowdown in unit as well as steep rock outcrops and slides. The unit has an open understory. Maintain 1000 foot buffer.
J.Bauchtal 5/15/96 10/22/96         T.Fifield 10/28/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Unit is predominately underlain by massive to thin-bedded marble interbedded with phyllite. Epikarst is moderate- to- well- developed throughout the unit. Soils are a mosaic of shallow to deep residual soils and shallow organic soils atop the epikarst ridges. The majority of the unit is moderate vulnerability karstlands, partial suspension required within unit as a minimum to minimize shallow soil displacement. Yarding should be across karst ridges not along to help minimize soil displacement. It is recommended that the knob in the center of the unit be deleted from the unit due to well developed karst features and the cliffs bounding the knob on two sides. Because of karst development within the unit, road construction should minimize clearing limits and disturbance during construction. Road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to the alignment. Timing of the road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be approved by both the Forest Geologist and the District Fisheries Staff.  LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves;</u> retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Northern and Eastern half of unit was dropped for beach buffer. Protect Karst knob in center. (See geology write-up) Karst protection may result in uneven-aged / pockets of reserve timber. Expect fall down in layout. PCT at 15 years.

Mapscale 1:7920 (8 inch to Mile)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
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# CHASINA PROJECT HARVEST UNIT DESIGN CARD

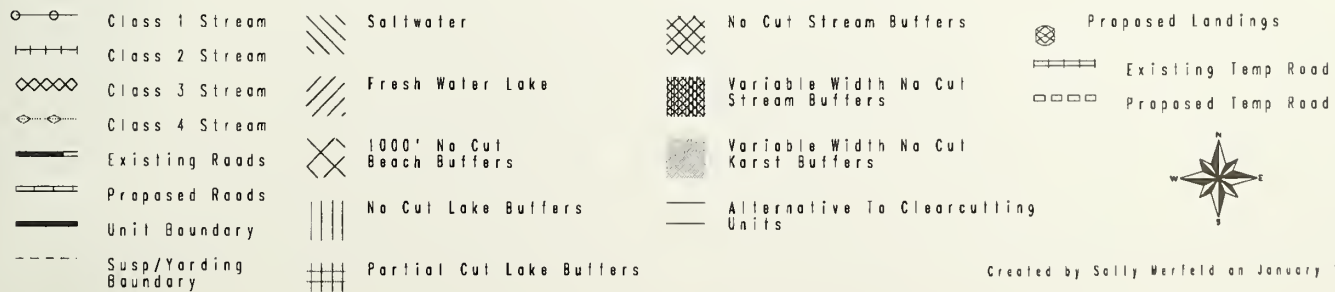
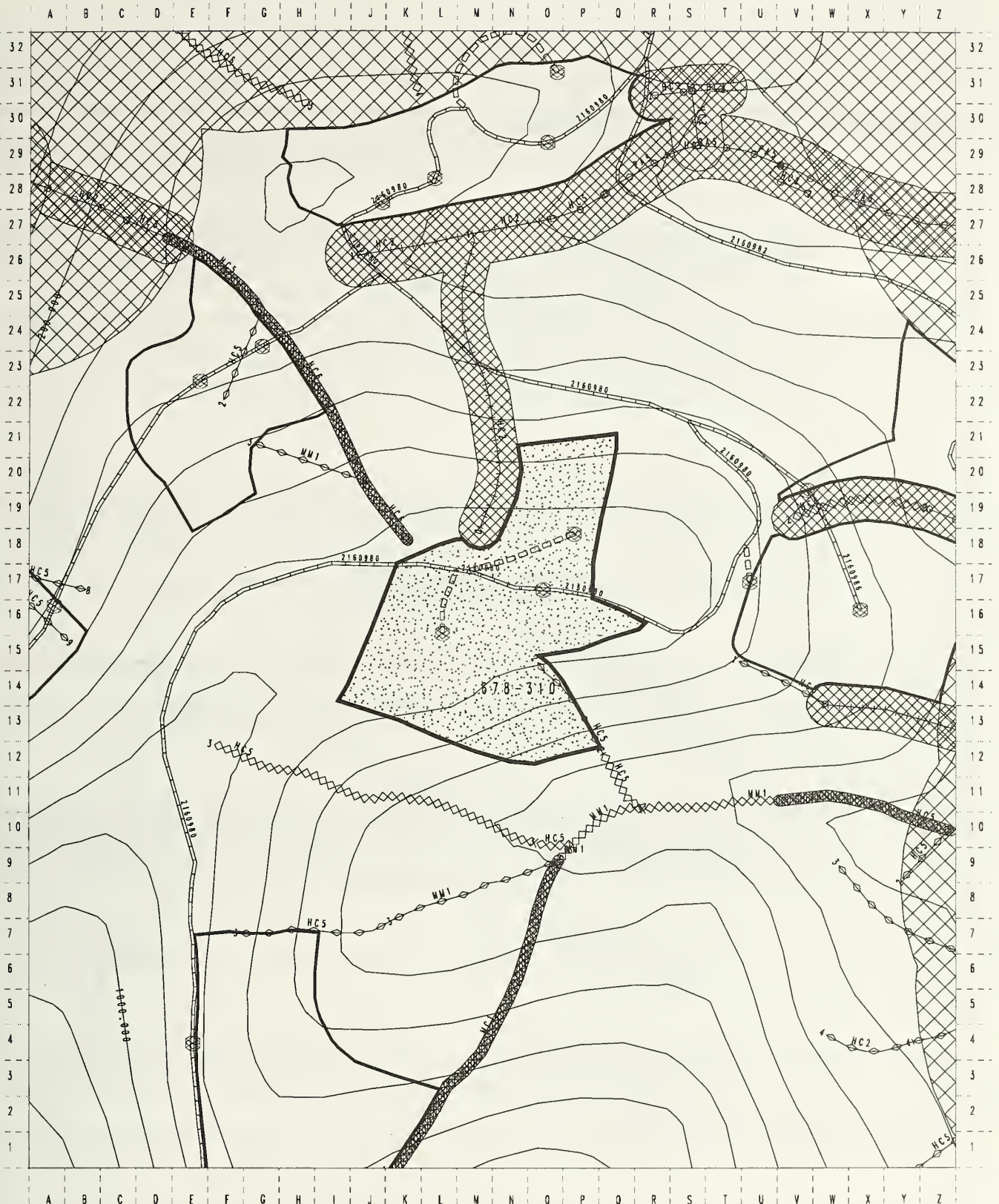
VCU-UNIT#: 678-310      ACRES: 26      VOL: 1215      MBF      ALTERNATIVES: 3,4,5,6

PHOTO YR#: '91-590-65      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67802-019, high windthrow risk. Productivity of site is high. Maintain setting width between units. High mistletoe deflect. Road to southeast dropped.
J. Oien 5/96	ROADS: Avoid karst formations when possible.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 32E (StNicholas 60-75%), with a small amount of 32C (StNicholas 5-35%). Partial suspension for forested wetlands and MMI3 (BMPs 12.5, 13.9). Cliffs reported, which corresponds with photos and confusion of mapping of 29EF. Possible field review needed during layout for deletion of cliffs and partial suspension is required over McGilvery soils and slopes >72% (BMPs 13.2, 13.5; TLMP 1997). Unit in third order watershed H21A and second order watershed EX7A.
K. McCartney, J. Hannon, 6/21/95	FISHERIES: Recommend that the lower boundary of the unit be no lower than 400' elevation (approximate road line). Stream 1 is a class II orange/ white stream that requires a 100' AHMU buffer (BMP 12.6). Stream should be shocked to check for presence of resident fish. This stream will require fish passage and timing (BMP 14.14). Stream 2 was classified as a class III green/ white, under the new TLMP (1997) system stream 2 is a class IV green/white. Stream 3 (outside the unit) was classified as a class III green/white, under the new TLMP (1997) system stream 3 is a class IV green/white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris before the end of the operating season or before the yarder leaves the area (BMP 13.16)
M.Dillman, J.Wrate 6/27/95 C.Tighe, A. Mueller 6/28/96	WILDLIFE:  Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Snags were seen in unit.
J.Baichtal 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Karst cliff reported by engineering recon. Northern edge of unit is by marble. Southern half of unit was not reconned by Forest Geologist, there may be karst developed there, resource concerns should be addressed during layout. Very steep marble slopes/cliffs (i.e. >100%) have very shallow organic soils atop them. These areas would fall into high vulnerability karstlands or McGilvery Soils.  LANDS:
T Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves:</u> Use type A clear-cut. Partial suspension required for soils protection. Dropped steep areas to the south and northeast for cliffs and karst. Keep road high and open to future settings to the west and southwest. Scarify soil to promote spruce. Minimize mistletoe infected residual hemlock by release treatment and PCT at 15 years.

# Chosina Study Area Interim Layout NO1 Unit 678-310 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 678-312      ACRES: 30      VOL: 864      MBF      ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-21      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67802-022, high windthrow risk. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units (high volume left). Possibly combine with unit 305. Layout road options with adjacent access in mind.
J. Oien 5/96	ROADS: Because of karst development within the unit, road construction should minimize clearing limits and disturbance during construction. Road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to the alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated by fall. Quarry placement and development should be approved by both the Forest Geologist and the District Fisheries Staff.
Field P.Krosse, 8/01/95 EIS R.Johnson	SOILS/WATERSHED: Observed McGilvery, Remedios, and Kupreanof soils. Slopes are 65-85%, plus rock outcrops. Partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1997). Limited field review. Karst reported in N end of unit. Portion of unit in second order watershed EX7A. Probable blowdown of 100' buffer on fish stream #2 in center of unit. Recommend slope break buffer with diameter limit cut instead (BMP 13.16). May need field review during layout for mitigation of karst, unsuitable McGilvery soils, and rock outcrops and slopes >72% (BMPs 13.2, 13.5; TLMP 1997).
K. McCartney, J. Hannon, 6/20/95	FISHERIES: Stream 1 was classified as a class III green/ white, under the new TLMP (1997) standards stream 1 is a class IV green/white. Stream 2 is a class I blue/ white TTRA up to the waterfall that requires a 100' buffer ( BMP 12.6). Above the waterfall stream 2 becomes a class III orange/ white that needs a 100' buffer due to its location and proximity to fish habitat (BMP 12.6). Green/ white streams requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris before the end of the operating season or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, M.Pacheco 6/21/95 C.Tighe, A. Mueller 5/23/96	WILDLIFE:  Deer forage and browsed plants were seen throughout unit. Bear sign seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/23/96 Wolf scat seen in unit with shells in it. Estuary requires a 1000 foot buffer.
J.Baichtal 5/15/96 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Karst cliff reported by engineering recon. Not visited by Forest Geologist. Suggest Geologist / Soils join visit. Moderate vulnerability karst as a minimum. Partial suspension required on karst portion of unit as a minimum. 10/96 still did not get to unit but based on adjacent geology karst is probable and steep marble cliffs may be found in unit.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. End several roads in unit. Unit on edge of 1000' beach buffer. PCT at 20 years.

# Chasina Study Area Interim Layout NOI Unit 678-312 Alt 3

Mapscale 1:7920 (8 Inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Korst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

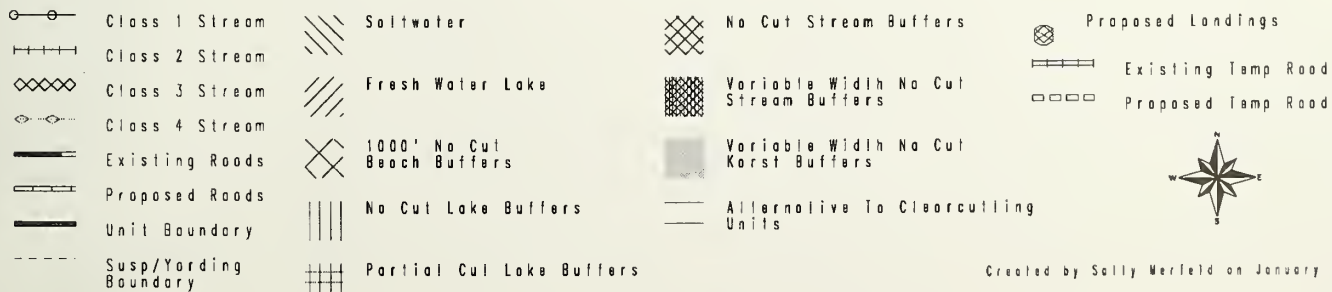
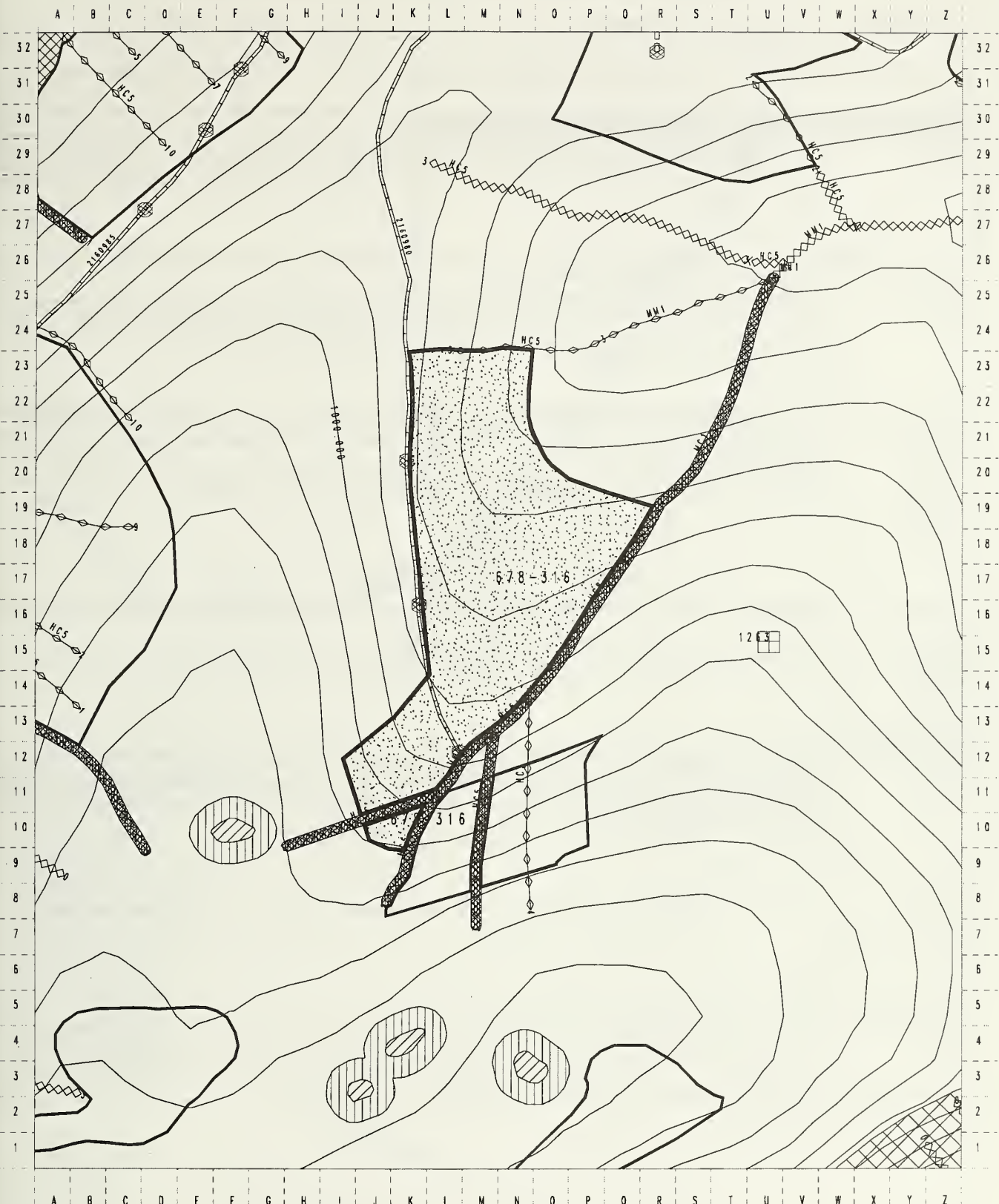
VCU-UNIT#: 678-316      ACRES: 33      VOL: 1188      MBF      ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-65      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67802-015, moderate windthrow risk, mod. to high elev. Productivity of site is high. Verify difficult roads/and/or landing locations. Maintain setting width between units. Small portion of difficult downhill yarding. Dropped 2 acres of cliffs-weather boundary.
J. Oien 5/96	ROADS: Avoid Karst formations when possible.
R.Johnson 6/20/96	SOILS/WATERSHED: Top portion of unit lies above 1200' elevation on the south end to about 980' on the north end. Partial suspension for karst, forested wetlands, and McGilvery (BMPs 12.5, 13.9; TLMP 1991). Top of the unit can be expanded further to the west. Lower portion of the unit between 910' elevation on the south end to about 830' on the north end, and down to about 640' on the east end. Elevations were measured in the field and may not correspond to those shown on the unit map. Partial suspension for forested wetlands, MMI3, small areas of MMI4 too small to delete, McGilvery, and nonstreams (BMPs 12.5, 13.1, 12.6, 13.5, 13.9, 13.16; TLMP 1997). Additional information is filed in the reconnaissance folder. Unit is in second order watershed EX8A.
D. Kuntzsch, M. Solomon, S. Deck, 6/20/96	FISHERIES: Stream 1 is a class III orange/ white that requires a slope break buffer. Stream 1 is 4 feet wide, has 10 feet of incision, and 43% gradient. Stream 2 is a class III orange/ white that requires a slope break buffer. Stream 2 is 8 feet wide, has 10 feet of incision and 7% gradient. Stream 3 was a class III orange/ white. Under the new TLMP (1997) standards stream 3 is a class IV orange/ white because it is 3 feet wide, has an incision of 3 feet and 3% gradient. Stream 3 is flagged orange/ white to provide additional resource protection. Orange/ white streams require directional falling, split yarding or full suspension, and immediate cleaning of introduced debris (BMP 13.16).
M.Dillman, J.Wrate 6/27/95 C.Tighe, B.Johnston, A. Mueller 6/13/96	WILDLIFE:  Bear sign seen in area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/13/96 Deer sign- beds, pellets, and browse seen in unit. Unit also had game trails throughout. Bear scat and dug up skunk cabbage seen. Wolf scat also seen in muskeg. Karst along ridge. Great goshawk habitat.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Dropped 2 acres of cliffs - feather boundary. See map. Drop upper road. Delete MMI4 soils. Slackline capabilities may be necessary for soil protection. Helicopter yarding recommended across last creek for stream protection. PCT at 15 years.

# Chasina Study Area Interim Layout NOI Unit 678-316 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

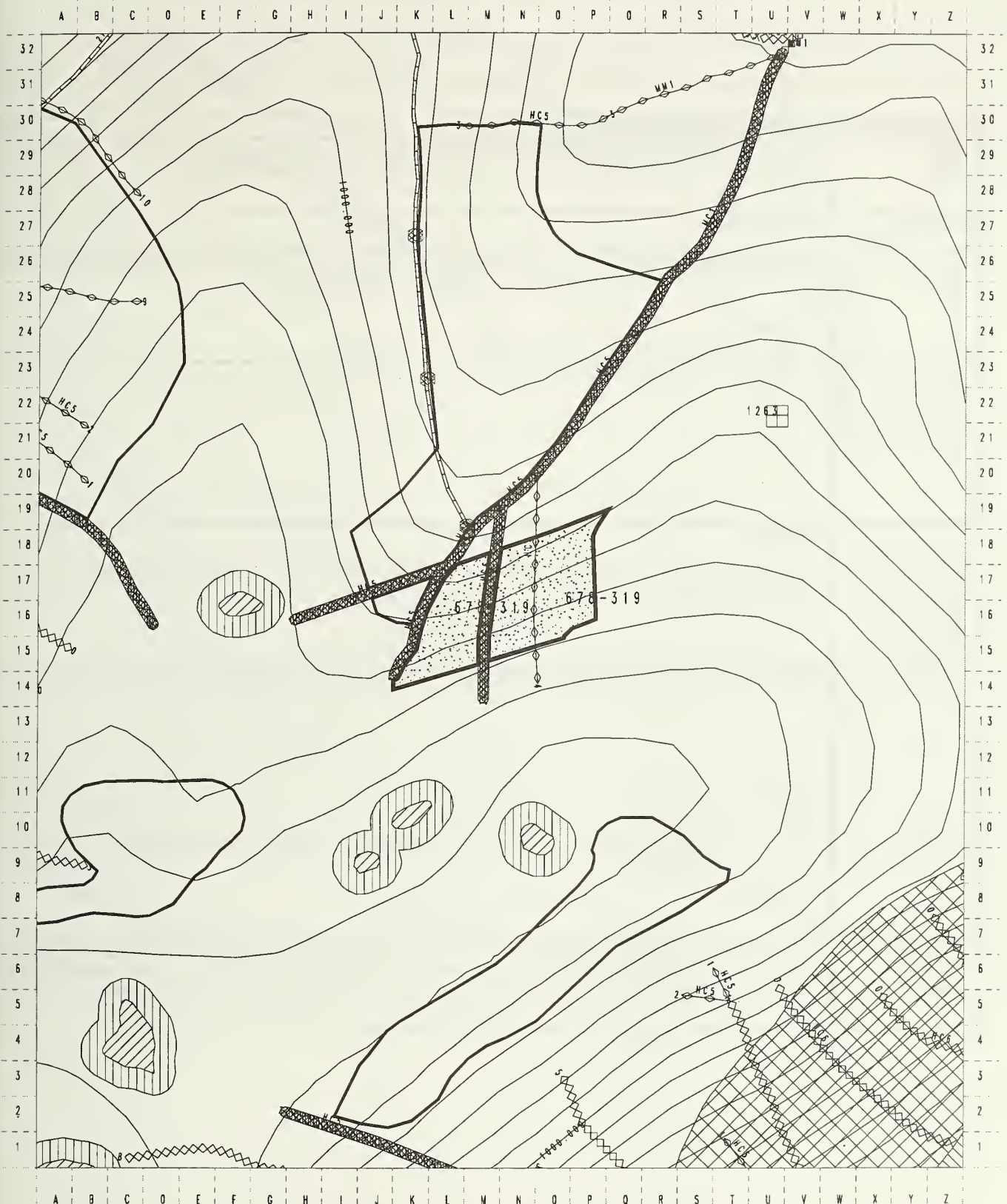
VCU-UNIT#: 678-319      ACRES: 9      VOL: 214      MBF      ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-590-64      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67802-012, high windthrow risk, high elev. mod. mistletoe present. Productivity of site is moderate. Unit design calls for clear-cut regeneration method. Potential to add on to the west on flat above units 316 and 319. Dropped top of unit to stay off oversteepen slopes to east and south. Maintain cedar component through seed trees, scarification, and planting.
J. Oien 5/96	ROADS: Avoid karst formations whenever possible.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 32E (StNicholas 60-75%). Partial suspension for MMI3 and forested wetlands (BMPs 12.5, 13.9). Field review may be needed during layout for unstable soils and McGilvery (BMPs 13.2, 13.5; TLMP 1997). Additional information is filed in the reconnaissance folder. Unit is in second order watershed EX8A.
K. McCartney, M. Becker, C. Tighe, J. Wrate, D. Kuntzsch, J. Frank, J. Baichtal, 6/13/95	FISHERIES: Stream 1 is a class III orange/ white (see unit 678-316) that requires a slope break buffer. Stream 2 is a class III orange/ white that requires a slope break buffer (BMP 13.16). Stream 4 was a class III green/ white, under the new TLMP (1997) standards stream 4 is a class IV green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial over. Clean streams of introduced debris before the end of the opperating period or before the yarder leaves the area (BMP 13.16).
C.Tighe, J. Wrate, M. Becker, K. McCartney 6/13/95 C.Tighe, B. Johnston, A. Mueller 6/13/96	WILDLIFE:  Recommend leaving live reserve trees and snags to maintain habitat structure and snag density. 6/13/96 Deer sign in unit.
J.Baichtal 5/15/96 10/22/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Possibly on Ruby Tuesday Claim Block. Well developed epikarst / sink holes / and small cave along upper unit boundary. The karst portion of the unit is of high vulnerability. The karst portion of the unit should be removed from the unit as per the standards and guidelines outlined in the RSDEIS for the TLMP.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut. Leave less than or equal to 16" cedars on edges of unit. Avoid infected hemlock residuals. Partial YC planting site. PCT at 25 years. Very steep to the south and east. ROAD TO UNIT DELETED.

# Chasina Study Area Interim Layout N01 Unit 678-319 Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 678-324      ACRES: 10      VOL: 225      MBF      ALTERNATIVES: 3, 4, 6

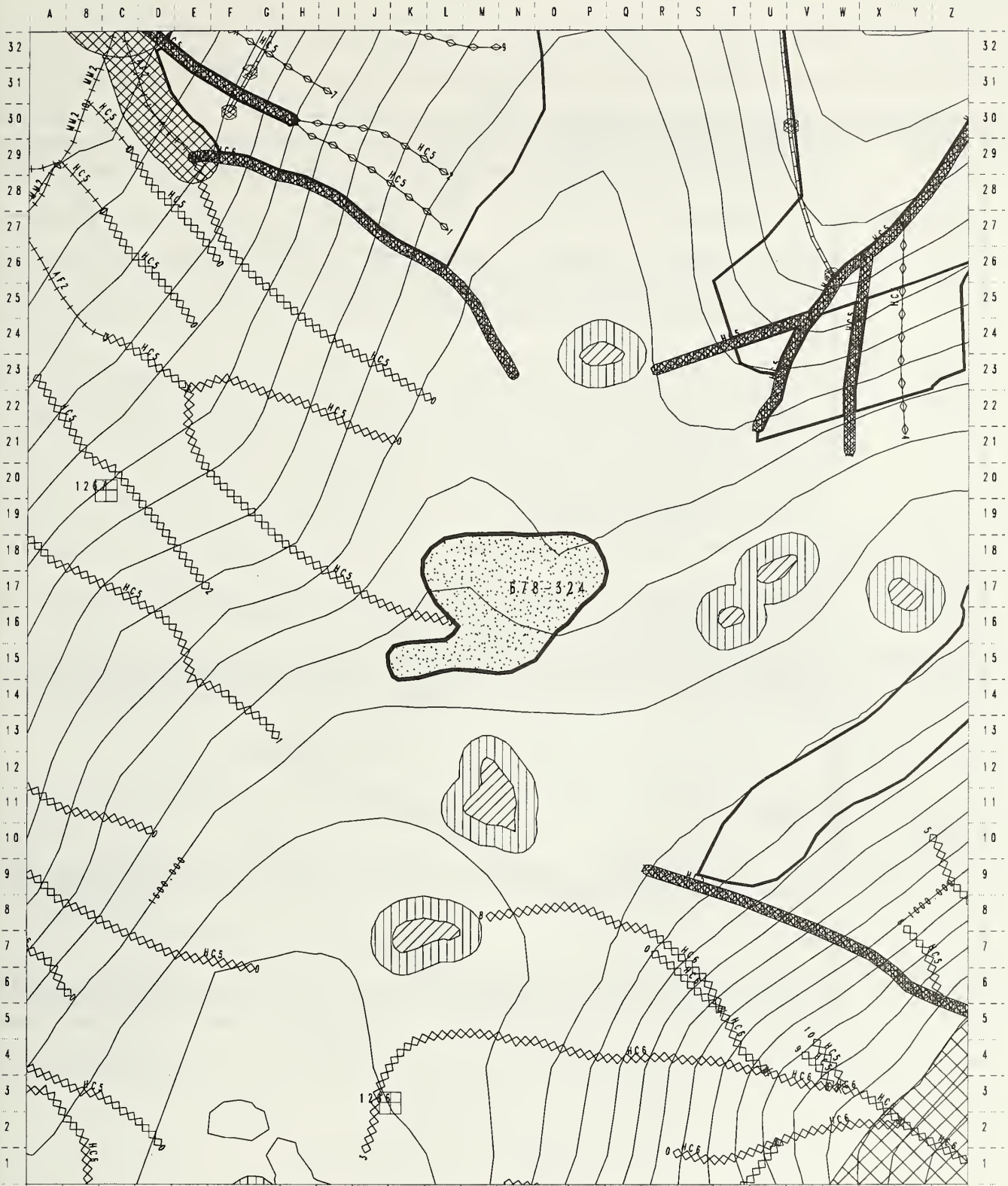
PHOTO YR/#: '91-590-64      1/4 QUAD: CRG A-1 NW 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67404-013, low windthrow risk, high elev. Productivity of site is moderate. 2-3 layer canopy, regeneration abundant. Unit extended to the west. Only economical if adjacent units harvested.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 32 E (StNicholas 60-75%). Partial suspension for MMI3 and forested wetlands (BMPs 12.5, 13.9). Unit is in third order watershed H21A and second order watershed EX8A.
J. Frank, M. Becker, K. Mc- Cartney, D. Kuntzsch, J. Ba- ichtal, C. Tighe, J. Wrate, 6/13/95	FISHERIES: This unit has no fisheries concerns.
C.Tighe, J.Wrate D. Kuntzsch, J. Frank, M. Becker 6/13/95 C.Tighe, B.Johnston, A. Mueller 6/13/96	WILDLIFE:  Few snags. Trees spaced out. Deer sign and browse rare. Recommend leaving live reserve trees and snags to maintain habitat structure and snag density.
J.Biachtal          T.Fifield 10/28/96	GEOLOGY/MINERALS: Unit visited by Forest Geologist. No known geology, minerals or karst resource concerns.          LANDS:          CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.          VISUALS:
G.Lawton 12/97	PRESCRIPTION: Even-aged shelterwood. Leave/reserve trees are 3 trees/acre preferably of cedar and spruce. They can be interspersed in clumps or along the perimeter(due to the small size of the unit. Overstory removal. Leave all unmerchantable trees standing where feasible and safe. . Partial suspension required for soils protection. Windthrow risk less than unit 325. Monitor high elevation regeneration difficulties. No PCT anticipated. Helicopter landing options to water or end of road.



# Chosina Study Area Interim Layout NOI Unit 678-324 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Korst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

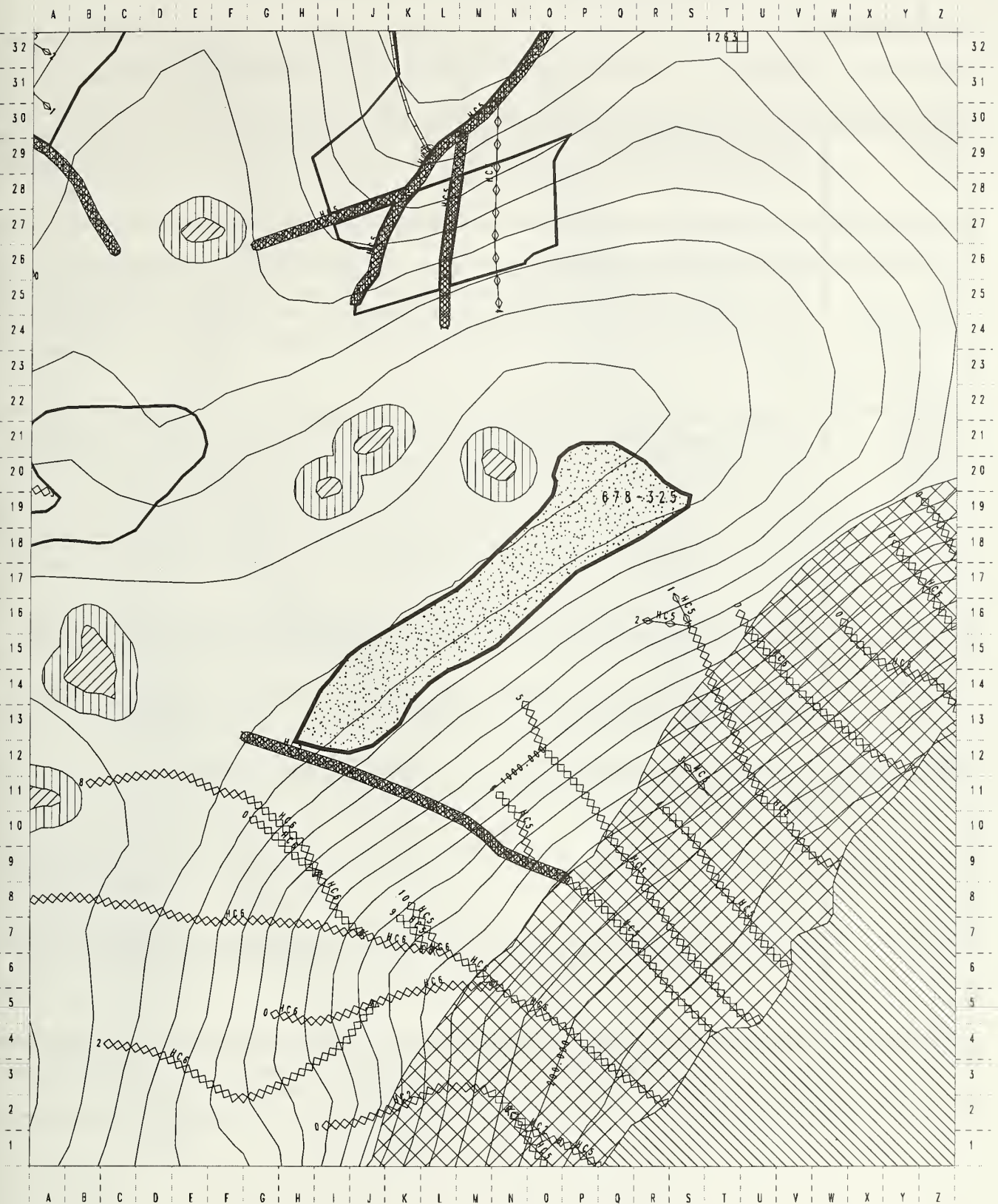
VCU-UNIT#: 678-325 ACRES: 17 VOL: 310 MBF ALTERNATIVES: 3, 4, 6

PHOTO YR/#: '91-590-63/'72(44)-772-160 1/4 QUAD: CRG A-1 NW 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67802-009, high windthrow risk, high elev. mod. mistletoe present. Productivity of site is moderate. Helicopter log only. Suspension requirements (see soils or fish). Soils added to unit below the slope break. Already dropped portions of steep slopes below. May have to leave more structure if soil protection increased.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 8/01/95	SOILS/WATERSHED: Lower boundary is about 1460' elevation and upper boundary is about 1660'. Elevations were measured in the field and may not correspond to those shown on the unit map. Minimum of partial suspension for forested wetlands, MMI 3 McGilvery, and small inclusions of MMI4 (BMPs 12.5, 13.5, 13.9; TLMP 1997). May need to plant seedlings after harvest to obtain regeneration because of subalpine conditions (BMPs 12.17, 13, 13.1 ). Additional information is filed in the reconnaissance folder.
K.Kitchel, M. Solomon, 7/16/96	FISHERIES: Stream 1 is a class IV green/ white. Below the junction with stream 2 , stream 1 is a class III orange/ white, width 3 feet, incision 3 feet and gradient 81%. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class III orange/ white, width 3 feet, incision 3 feet, and gradient of 100%. Stream 5 is a class III orange/ white, width 5 feet, incision 3 feet, and gradient 85%. Stream 7 is a class III orange/ white, width 6 feet, incision 3 feet, and gradient 75%. The north east slope break of stream 7 should be the unit boundary. All streams should be outside the unit boundary. The orange/ white streams require slope break buffers (BMP 12.6). The class IV green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman 7/96	WILDLIFE:  Wildlife recommends leaving live reserve trees and snags to maintain habitat structure and snag density. This unit did not rate as high priority for wildlife due to steepness and elevation both of which are more than what is recommended in the current goshawk protocol. Therefore, wildlife did not survey in 1995 or 1996.
J.Baichtal          T.Fifield 10/28/96	GEOLOGY/MINERALS: Unit was not visited by Forest Geologist. No karst resources described by other resource specialists. Carbonate is mapped within the on the geologic map. If present, most likely it is of moderate vulnerability. Partial suspension is required.          LANDS:   CULTURAL: Lower portions of this unit and the adjacent dropped unit 678-327, were surveyed in search of remnants of the Friendship Mine. The modern prospect was located in 678-327. Nothing was located in 678-325. No concerns with this unit.   VISUALS:
G.Lawton 12/97	PRESCRIPTION: Overstory removal. Protect/leave all spruce and cedar less than 16" DBH for protection and propagation of cedar at high elevation. Leave cedar seed trees on perimeter. Harvest above 1460' only, <u>see map</u> . Helicopter landing options to road or water.

# Chasina Study Area Interim Layout N01 Unit 678-325 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-361      ACRES: 31      VOL: 518      MBF      ALTERNATIVES: 3,5,6

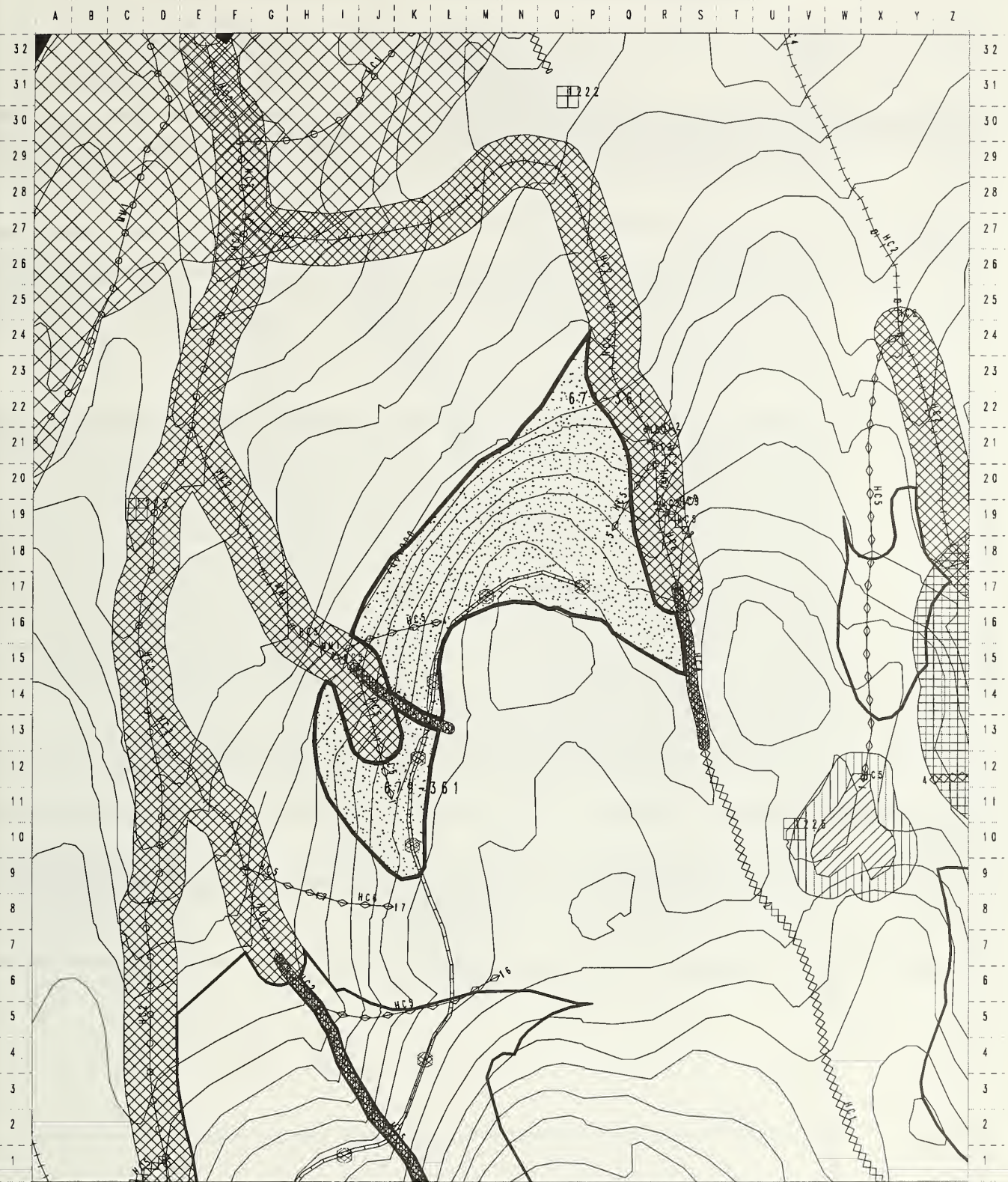
PHOTO YR/#: '91-390-225      1/4 QUAD: CRG B-1      SE 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67903-047, low windthrow risk, high mistletoe present. Unit changed to provide proportionality of volume classes. Productivity of site is low. Partial cut buffer. Set landings near edge of DROPOFF. Maintain YC component through planting if needed. Low economics, low volume area surrounding unit.
J. Oien 5/96	ROADS: No concerns.
Field D. J. Landwehr 8/16/95 EIS R.Johnson	SOILS/WATERSHED: Partial suspension is required throughout the unit for MMI3 and wetland soils (BMPs 12.5, 13.9). A 100' buffer is required on at least the lower portion of fisheries stream #2 (BMPs 12.6, 12.6a). The remainder of this stream should be given at least green and white protection (BMP 13.16). Two smaller streams on the west side of the unit should be given green and white protection (BMP 13.16). These two streams, plus additional streams, are designated for orange and white protection by fisheries. These differences in prescriptions can be reconciled during layout. Additional information is filed in the reconnaissance folder.
M. Becker, K. Buckley, 8/28/95, 8/29/95	FISHERIES: Stream 1 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). The upper section of this stream was a class III orange/white, under the new TLMP (1997) standards the upper section of stream 1 is a class IV orange/ white because it is 3 feet wide, has 3 feet of incision and 14% gradient. The upper section of class 1 is flagged orange/ white to provide additional resource protection. Stream 2 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). The upper section of this stream is a class III orange/ white, that is 9 feet wide, has 45 feet of incision and 27% gradient. Stream 2 requires a slope break buffer. Stream 3 is a class III orange/ white that is 6 feet wide has 6 feet of incision and 49% gradient. Stream 3 requires a slope break buffer. Stream 4 was a class III orange/ white, under the new TLMP (1997) standards stream 4 is a class IV orange/ white because it is 2 feet wide has 3 feet of incision and 20% gradient. Stream 4 is flagged orange/ white to provide additional resource protection. Stream 5 was a class III orange/ white, under the new TLMP (1997) standards stream 5 is a class IV orange/ white because it is 3 feet wide has 3 feet of incision and 17% gradient. Stream 5 is flagged orange/ white to provide additional resource protection. The orange/ white streams require directional falling, and split yarding or full suspension and immediate removal of introduced debris from the stream channel (BMP 13.16). Differences between soils and fisheries will be reconciled during unit layout.
M.Pacheco 6/27/95. C.Tighe, B.Johnston, A.Mueller 6/26/96 & 7/19/96	WILDLIFE:  Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/26/96 A pair of lesser yellow-legs in muskeg helispot. 7/19/96 Deer pellets and beds, bear scat, and game trails throughout the area. Unit 679-501 is the helicopter potion of this unit.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: Although survey of this unit was planned for 1996, closer inspection suggests it lies in low sensitivity terraine. The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned..  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Leave cedar seed trees around perimeter if possible. Partial suspensoin required. Possible planting of cedar required, PCT at 25+ years.



# Chasina Study Area Interim Layout NOI Unit 679-361 Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-363 ACRES: 66 VOL: 1650 MBF ALTERNATIVES: 3, 5, 6

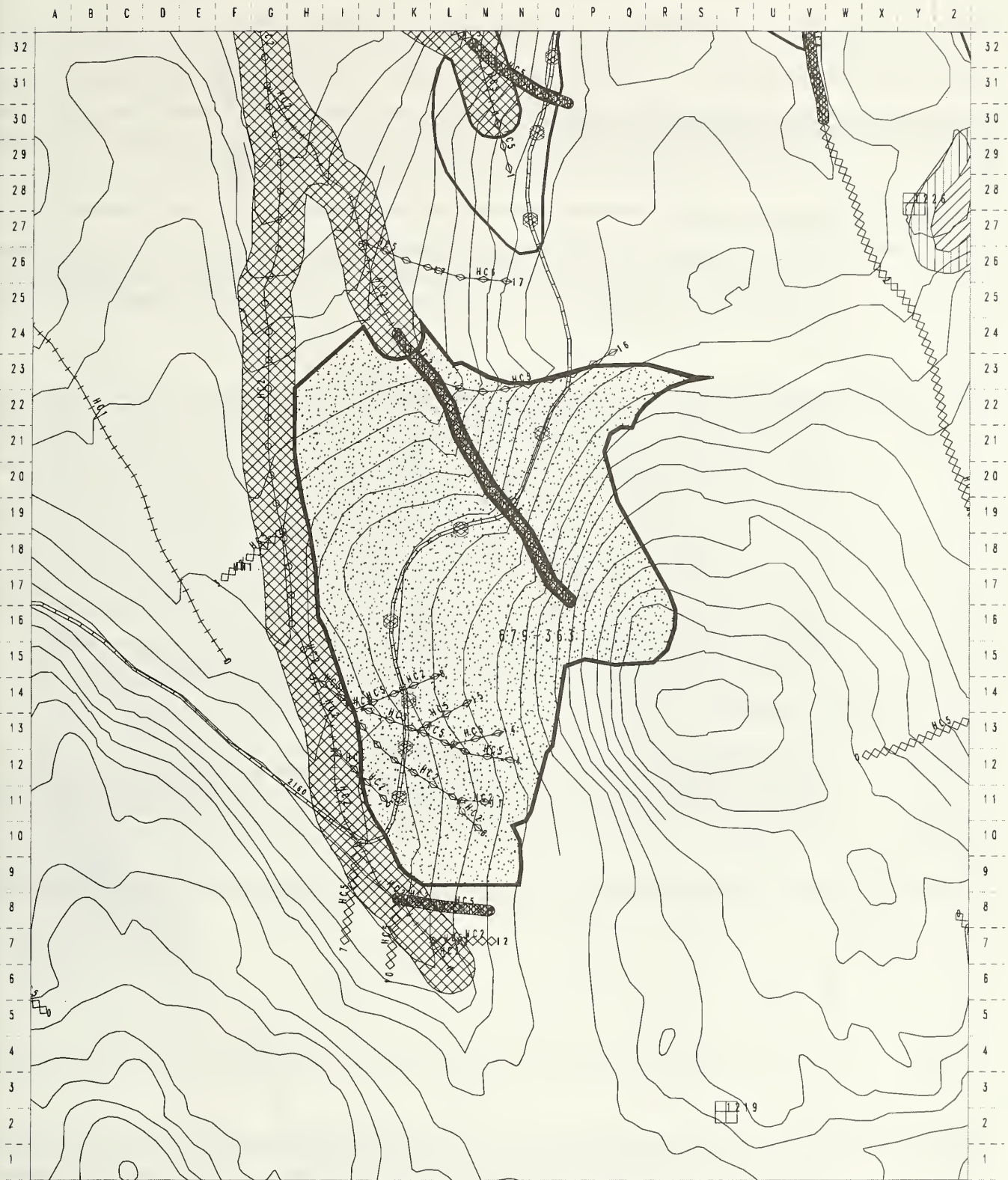
PHOTO YR#: '91-390-225 1/4 QUAD: CRG B-1 SE 1/4 LOGGING SYSTEMS: HE,RS,LS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67903-054, low windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is moderate. Maintain setting width between units. Verify roads and/or landing locations. Uneconomic, low volume area surrounding. Six acres dropped for cliffs and low value timber.
J. Oien 5/96	ROADS: No concerns.
Field D. J. Landwehr 8/17/95 EIS R.Johnson	SOILS/WATERSHED: Partial suspension for MMI3 and forested wetlands (BMPs 12.5, 13.9). Expand the 100' buffer in the north portion of the unit to encompass the lower portions of the V-notches because of MMI4 soils (BMP 13.5). Helicopter logging may be needed in the area upslope of the road, and the slope breaks along the water quality creeks (BMPs 13.9, 13.16). Additional protection of streams per fisheries. Additional roads may be required for the down slope portion of the unit below the break, and profiles may be necessary (BMPs 13.9, 14.1). Additional information is filed in the reconnaissance folder. Minor amounts of Kaikli soils present(TLMP 1997).
D. Kuntzsch, K. Buckley, M. Becker, 8/25/95	FISHERIES: Stream 1 is a class I blue/white that requires a 120' TTRA buffer (BMP 12.6). Stream 2 is a class II blue/white that requires a 120' TTRA buffer (BMP 12.6); just downstream of the junction with stream 16, stream 2 becomes class III orange/white and requires a slope break buffer. Streams 16 and 17 were classified as class III green/white tributaries to stream 2, under the new TLMP (1997) standards streams 16 and 17 are class IV green/ white. Stream 4 was a class III orange/white tributary to stream 1, under the new TLMP(1997) standards stream 4 is a class IV orange/ white because it is 3 feet wide has 7 feet of incision and 17% gradient. Stream 4 is flagged orange/ white to provide additional resource protection. Streams 8 and 15 were green/white class III tributaries to stream 4, under the new TLMP (1997) standards streams 8 and 15 are class IV green/ white. Stream 14 was a class III orange/ white, under the new TLMP (1997) standards stream 14 is a class IV orange/white because it is 2 feet wide, has 3 feet of incision and 46% gradient. Stream 14 is flagged orange/ white to provide additional resource protection. Stream 5 was a class III orange/white tributary to stream 1, under the new TLMP standards stream 5 is a class IV orange/ white because it is 3 feet wide has 6 feet of incision and 30% gradient. Stream 5 is flagged orange/ white to provide additional resource protection. Streams 6 was a class III orange/ white, under the new TLMP (1997) standards stream 6 is a class IV orange/ white because it is 2 feet wide and has 7 feet of incision, gradient was not collected. Stream 6 is flagged orange/ white to provide additional resource protection. Stream 11 was a class III orange/ white, under the new TLMP (1997) standards stream 11 is a class IV orange/ white that is 2 feet wide, has 7 feet of incision and 11% gradient. Stream 11 is flagged orange/ white to provide additional resource protection. Stream 9 is a class III orange/ white, that is 5 feet wide, has 7 feet of incision and 11% gradient. Stream 9 is on the southern boundary and its north slope break should be used as the unit boundary. The orange/white streams require directional falling, and split yarding or full suspension over, and immediate slash removal (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial over. Stream road crossings will require fish passage and timing on blue/white streams #1 and 2 (BMP 14.14). Follow soils protection instructions for V-notches.
M. Pacheco 6/27/95 C.Tighe, B.Johnston, A.Mueller 6/26/96	WILDLIFE:  Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There were two sensitive plants, <i>Platanthera chorisiana</i> , the choris bog orchid, found by a botanist in this unit in 1995. Harvesting this unit as it is currently laid out will destroy these plants. Changes in unit design will be done at the time of layout to try to avoid harm to the plants. A pair of lesser yellow-legs was seen in the muskeg helispot.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.
J.Short 12/17/97	VISUALS: To meet maximum modification VQO retain about (7) .5 to 1.5 acre islands randomly scattered along part of the back-line to soften the very pronounced edge created by this highly visible boundary.
G.Lawton 12/97	PRESCRIPTION: Southern 1/4 of unit around streams: patch cut by helicopter several cuts, totalling 4 acres (maximum cut this entry of the 17 acres of uneven-aged management prescribed). Northern portion of unit: overstory removal above the road by helicopter. Retain cedar and spruce less than 16" DBH for structure and soil protection and cedar propagation. Feather boundary, retaining 16" DBH in split lines and edges of unit where yarding corridors allow (pie-shaped retention areas on lower boundary). Areas of scrub and cliffs to the east are dropped. PCT at 20 years.



# Chosina Study Area Interim Layout NOI Unit 679-363 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

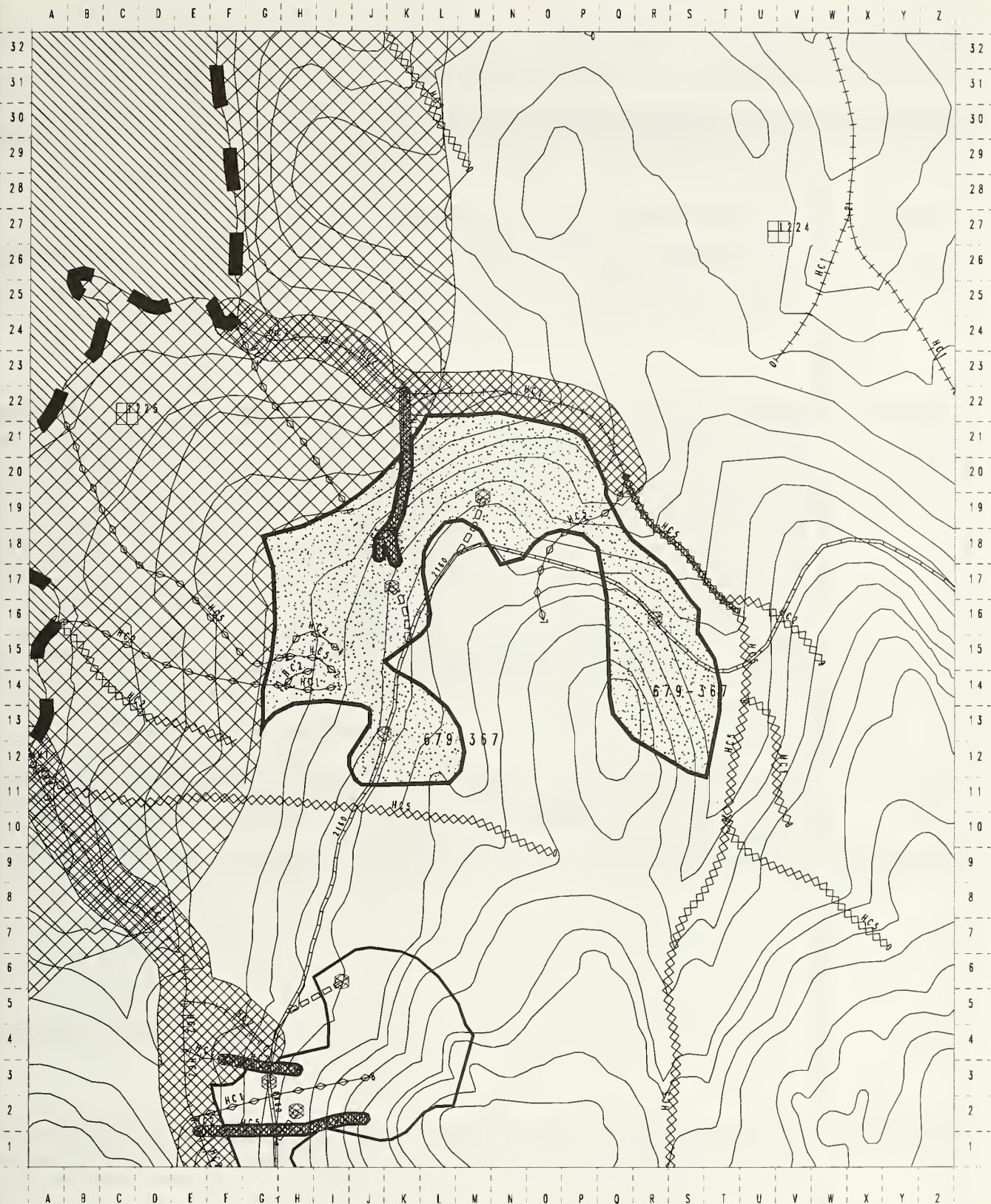
VCU-UNIT#: 679-367      ACRES: 39      VOL: 250      MBF      ALTERNATIVES: 3, 5, 6

PHOTO YR/#: '71(51)-1472-46 1/4 QUAD: CRG B-1 SE 1/4 LOGGING SYSTEMS: RS,SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67903-058, low windthrow risk. Productivity of site is moderate. Uneconomic, low volume area surrounding. Split-yarding required on stream where possible. Dropped 4 acres due to scrub timber.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 57D (Petrel 35-60%), with 550C (StNicholas - Kaikli 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). May need adjustment of boundary lines to exclude and protect non-harvestable low volume wetlands (BMP 12.5), and to delineate a harvestable unit. Protection of streams per fisheries (BMPs 12.6a, 13.16). Minor amounts of Kaikli soils present (TLMP 1997).
D. Kuntzsch, M. Becker, 9/1/95	FISHERIES: Stream 6 along east and north boundaries is a class II blue /white that requires a slope break buffer plus 100' TTRA (BMP 12.6). At the confluence of streams 7 and 6, stream 6 becomes a class III orange/white. Stream 6 requires a slope break buffer for this reach; in some cases the slope break is a rock ledge or cliff. Stream 5 is a class III orange/ white that is 7 feet wide, has 8 feet of incision and 21% gradient. Stream 5 requires a slope break buffer. Stream 7 was a class III orange/ white, under the new TLMP (1997) standards stream 7 is a class IV orange/ white that is 2 feet wide has 2 feet incision and 22% gradient. Stream 7 is flagged orange/ white to provide additional resource protection. Stream 10 was a class III orange/white, under the new TLMP (1997) standards stream 10 is a class IV orange/ white. Stream 10 is outside the unit boundary. Below the unit, stream 1 is a class II orange/white, but in the unit it was a class III green/white, under the new TLMP (1997) the class III green/ white section of stream 1 is a class IV green/ white. Stream 3 was a class III green/white tributary to stream 1, under the new TLMP (1997) standards stream 3 is a class IV green/ white. Stream 2 was a class III orange/white, under the new TLMP (1997) standards stream 2 is a class IV orange/ white because it is 3 feet wide has 7 feet of incision and 18% gradient. Stream 2 is flagged orange/ white to provide additional resource protection. Stream 4 was a class III green/white (trib. to stream 2), under the new TLMP (1997) standards it is classified as a class IV green/ white. The orange/white streams require directional falling, and split yarding or full suspension over, and immediate slash removal (BMP 13.16). The green/white streams require directional falling, and split yarding (where practical) and partial suspension over. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman, B.Johnston 8/31/95 C.Tighe, B.Johnston, 7/11/96	WILDLIFE:  Deer, bear and wolf signs. Two wolf killed deer found. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is within a half mile of known bald eagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service needs to be documented. 7/11/96 Deer sign was seen throughout the unit. Maintain 1000 foot estuary buffer.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Partial suspension required. Expect wetland soils unit falldown. Unevenaged group selections, 1-2 acres in size covering 1/4 of the unit. Shape cuts above the road in triangles for easy downhill yarding with slackline system. Shape cuts below the road in corridors 150' wide for running skyline. Possible release to lessen mistletoe infection. PCT at 25+ years.

# Chosina Study Area Interim Layout NOI Unit 679-367 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-378      ACRES: 29      VOL: 608      MBF ALTERNATIVES: 3,5,6

PHOTO YR/#: '71(51)-1472-45      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: LS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67903-021, moderate windthrow risk, majority downhill yarded. Retain stand structure for wildlife where feasible. Partial cut buffer. Productivity of site is low. Maintain setting width between units.
J. Oien 5/96	ROADS: Evaluate temporary roads for specified road criteria.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), 57D (Petrel 35-60%), 3D (Vixen - Traitors 35-60%). Primarily forested wetlands, which corresponds to a need for a minimum of partial suspension (BMPs 12.5, 13.9). Protection of streams per fisheries (BMPs 12.6a, 13.16). Silviculture deleted pockets of scrub and steep slopes in the southeast portion of unit. Deletion of scrub may meet requirement to defer harvest on Kaikli soils(TLMP 1997). Minor amounts of Kaikli soils found in unit (TLMP 1997).
D. Kuntzsch, B. Steel, R. Reeves, 8/1/95	FISHERIES: Stream 1 is a class II blue/white (TTRA) along most of the west unit boundary. Approximately at the confluence of stream 6, stream 1 becomes a class III orange/white that requires a slope break buffer and a 25-50' windfirm edge to protect the V-notch. Stream 2 is a class III orange/ white that is 5 feet wide, has 7 feet incision and 17% gradient. Stream 2 is on the southern boundary of the unit and the north slope break of stream 2 should be the unit boundary. Streams 3, 4, and 5 are class III orange/white, but are outside the current south boundary of the unit. Streams 6 was a class III orange/ white, under the new TLMP (1997) standards stream 6 is a class IV orange/ white that is 3 feet wide, has 15 feet of incision and 20% gradient. Stream 6 is flagged orange/ white to provide additional resource protection. Stream 7 is a class III orange/white, that is 5 feet wide, has 15 feet of incision and the gradient was not collected. Stream 7 requires a slope break buffer. Stream 8 was a class III green/ white, under the new TLMP (1997) standards stream 8 is a class IV green/ white. Streams 9 and 10 are class II blue/ white that require 120' TTRA buffers (BMP 12.6). Stream 9 becomes a class III orange/ white. Stream 9 is 5 feet wide, has 3 feet of incision and 8% gradient. Stream 9 does not have a class III buffer because most of the stream is outside the unit boundary, where stream 9 is in the unit the southern slope break of stream 9 should be the unit boundary. The orange/ white streams require directional falling, and split yarding or full suspension, and immediate slash removal (BMP 13.16, 12.6). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area. Roads crossing blue/white streams will require fish passage and timing (BMP 14.14). Stream 1 should be shocked along western unit boundary to make sure of stream class call.
C.Tighe, B.Johnston 7/11/96	WILDLIFE:  This unit has been identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. This unit was not surveyed during 1995, as it did not meet the habitat requirements called for in the current goshawk protocols. Recommend leaving live reserve trees and snags where possible to maintain habitat struture and snag density. Deer sign seen throughout unit.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Clear-cut w/ reserves; retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Delete 7 acres (2 for uneconomical scrub, 2 steep, 3 unreachable). May require live skyline system for steep downhill portions. Leave cedar trees on perimeter where possible. Monitor for planting needs. PCT at 25+ years.



# Chosina Study Area Interim Layout NOI Unit 679-378 Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-379      ACRES: 4      VOL: 95      MBF      ALTERNATIVES: 3,5,6

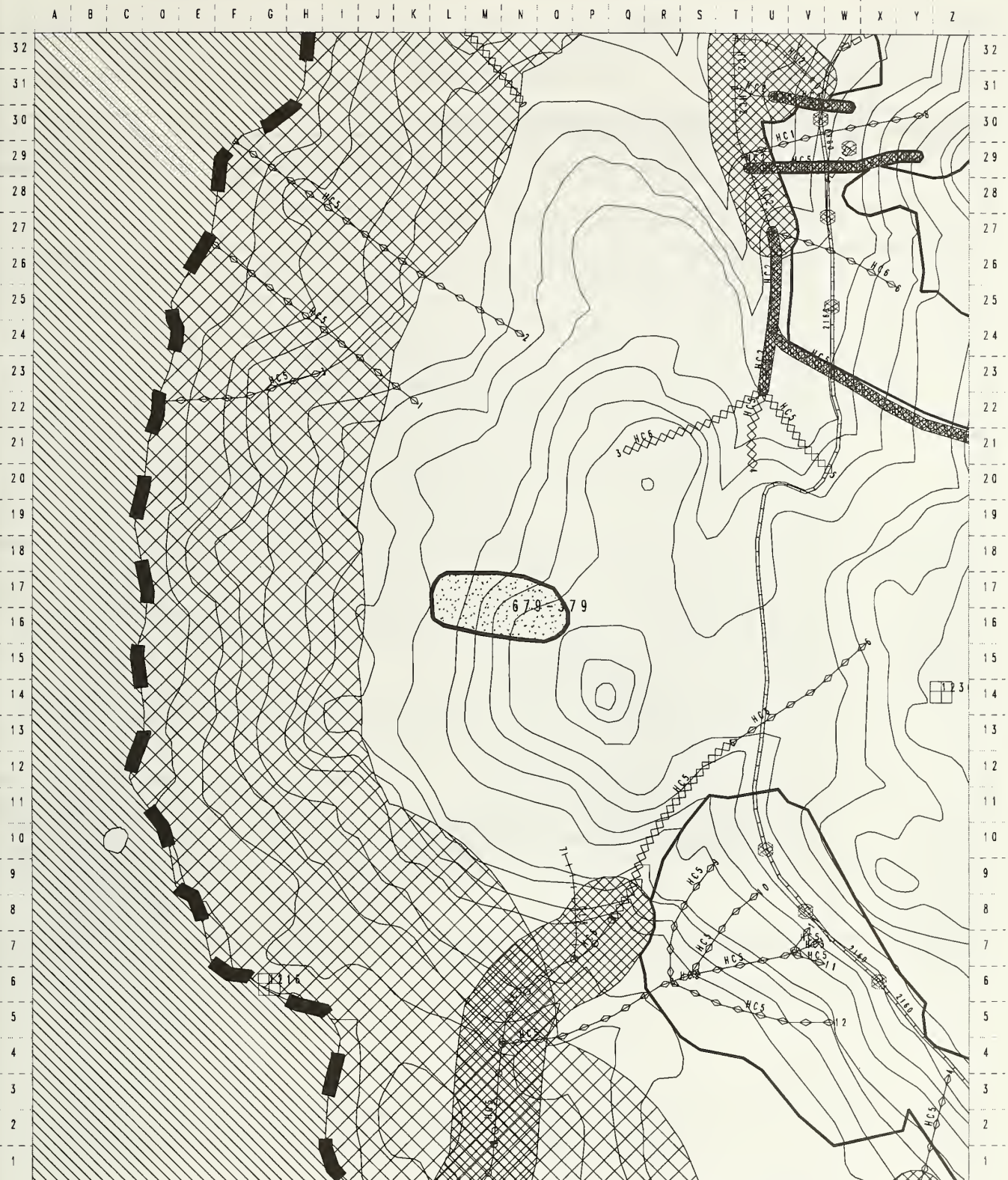
PHOTO YR/#: '71(51)-1472-45      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67903-011, low windthrow risk. Productivity of site is moderate. Uneconomic, low volume area surrounding. Very small stand of merchantable timber.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). May need to adjust boundary lines for harvestable timber, particularly a deletion along the center of the S boundary line for exclusion of low volume timber. No streams evident. Possible non-streams should be protected by partial suspension (BMP 13.16). Change from road and cable logging to helicopter yarding should provide full suspension (BMP 13.9). Silviculture deleted north portion of unit. Minor amounts of Kaikli soil present(TLMP 1997).
D.Kuntzsch, 7/96	FISHERIES: Office review revealed no apparent fisheries concerns.
C.Tighe, B.Johnston, A.Mueller 6/19/96	WILDLIFE:  This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and Forest Service. Written coordination with the U.S. Fish and Wildlife Service needs to be documented. This unit did not rate as a high priority area for wildlife because of its size, only 4 acres. It was not surveyed during 1995. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J. Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 5% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. 3 acres with helicopter optional. PCT at 25+ years.



# Chasina Study Area Interim Layout NOI Unit 679-379 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |                       |                            |                                      |                    |
|-----------------------|----------------------------|--------------------------------------|--------------------|
| Class 1 Stream        | Saltwater                  | No Cut Stream Buffers                | Proposed Landings  |
| Class 2 Stream        | Fresh Water Lake           | Variable Width No Cut Stream Buffers | Existing Temp Road |
| Class 3 Stream        | 1000' No Cut Beach Buffers | Variable Width No Cut Karst Buffers  | Proposed Temp Road |
| Class 4 Stream        | No Cut Lake Buffers        | Alternative To Clearcutting Units    |                    |
| Existing Roads        | Partial Cut Lake Buffers   |                                      |                    |
| Proposed Roads        |                            |                                      |                    |
| Unit Boundary         |                            |                                      |                    |
| Susp/Yarding Boundary |                            |                                      |                    |





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

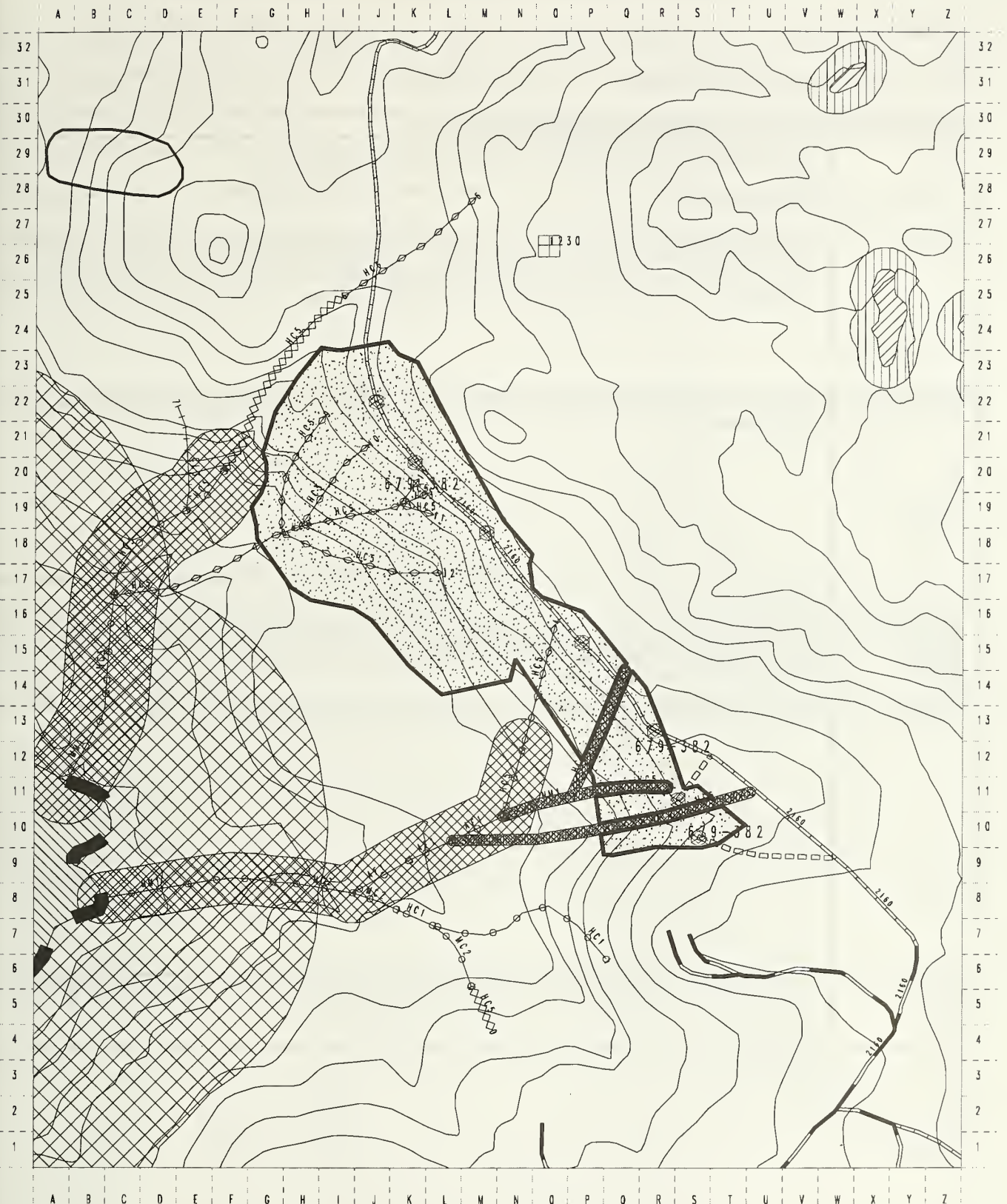
VCU-UNIT#: 679-382      ACRES: 42      VOL: 613      MBF ALTERNATIVES: 3, 4, 5, 6

PHOTO YR#: '71(51)-1472-44      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67903-011, high windthrow risk, small portion downhill yarded. Retain stand structure for wildlife where feasible. Maintain setting width between units. Road line was moved upslope and further east. Helicopter yarding method above cable reach is optional. Steep eastern portion dropped due to resource protection. (502).
J. Oien 5/96	ROADS: Numerous stream crossings - evaluate split yarding and road network.
R.Johnson 6/21/96	SOILS/WATERSHED: Top of unit should be deleted because of blind-lead and lack of suspension required for forested wetlands (BMPs 12.5, 13.9). New upper backline varies from about 500' elevation in the southeast corner, drops to 400' in the center of the unit, climbs back to 675', and then drops to 500' at the v-notch of fisheries stream #6. Elevations were measured in the field and may not correspond to those shown on the unit map. A slope break buffer is the north boundary of the unit on this class III orange and white stream (BMPs 12.6a, 13.16). The side slope portion of the unit lies between the break on the top down to 300' elevation. Recommend partial suspension of this portion of the unit because of unstable MM14 soils, past slides, slopes >72%, and McGilvery to protect fish streams, a limited volume available for harvest, and impacts from constructing the 2160 road (BMPs 12.6, 13.1, 13.5, 14.2; TLMP 1997). Recommend full suspension if this portion of the unit is harvested (BMPs 13.5, 13.9). Bottom portion of the unit lies between 300' and 200' elevation. The lower boundary of the unit is defined by the limits of commercial timber. Boundary in the southwest portion of the unit can be expanded from that shown on the unit map to include lands formerly in 679-502 that are outside of buffers for fisheries streams 1 through 5. Partial suspension in bottom portion of unit for forested wetlands, McGilvery, protection of fisheries streams, and protection of nonstreams and seeps (BMPs 12.5, 12.6, 12.6a, 13.9, 13.16; TLMP 1997). Should expand south boundary of unit to existing clearcut because of blowdown. Partial suspension on this addition for forested wetlands (BMPs 12.5, 13.9). Protect streams per fisheries (BMPs 12.6, 12.6a, 13.16). Minor amounts of Kitkun soil present (TLMP 1997). Unit lies in third order watershed 000Z. Additional information is filed in the reconnaissance folder.
K. McCartney, H.Roerick, K.Buckley, 8/1/95 B. Johnston, K. Buckley, M. Solomon, R. Johnson, 6/21/96	FISHERIES: Stream 1 is a class I blue/ white that requires 120' TTRA buffer. Stream 2 is a class III orange/ white that requires a 25' buffer because it is flowing through an unstable alluvial fan directly above fish habitat (BMP 13.16). Stream 4 is a class I blue/ white streams that requires a 140' TTRA buffer. At 240' of elevation stream 4 becomes a class III orange/ white, under the new TLMP (1997) stream 4 is a class IV orange/ white. The upper section of stream 4 is flagged orange/ white to provide additional resource protection. Stream 6 is a class II blue/white that requires a 200' TTRA buffer (BMP 12.6). Streams 3 is a class III orange/ white that is 6 feet wide, has 3 feet of incision and 18% gradient. Stream 3 requires a slope break buffer. Stream 5 is a class III orange/ white that is 6 wide, has 8 feet of incision and 47% gradient. Stream 5 requires a slope break buffer. Streams 9, 10, 11, and 12 are class IV green/white. The orange/white streams require directional falling, and split yarding or full suspension over, and immediate removal of introduced logging debris (BMP 13.16). The green/white streams require directional falling, and split yarding (where practical) or partial over. These streams must be cleaned of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16, 12.6). A lot of blowdown and wet soils noted in unit.
M. Pacheco 7/20/95 B. Johnston, K. Buckley, R. Johnson, M. Solomon 6/21/96	WILDLIFE: This unit identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Four CMT's, (Culturally Modified Trees), found in the unit, 2 in live trees and 2 in snags. Deer browse and pellets seen in unit. Woodpecker species heard. Alder in overstory. Unit 679-502 is the helicopter portion of this unit.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.  LANDS:
T.Fifield 10/28/96	CULTURAL: This unit was surveyed in 1996 to determine if historic materials associated with the Saco and Equator Prospects are located in or near the unit. No cultural materials were noted. There are no concerns with the unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Potential suspension required. Dropped NE steep portion (presale check if helicopter option). Dropped scrub in center. Salvage windthrow patch in SE. Move unit to existing clearcut. Presale needs to pick up the windthrow and protect the streams in NW corner. Regeneration harvest (cc) the remainder of unit. May have to plant YC for retention of species. PCT at 20 years.

# Chosina Study Area Interim Layout N01 Unit 679-382 Alt 3

Mapscale 1:7920 (8 inch to Mile)





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-383 ACRES: 7 VOL: 95 MBF ALTERNATIVES: 3, 6

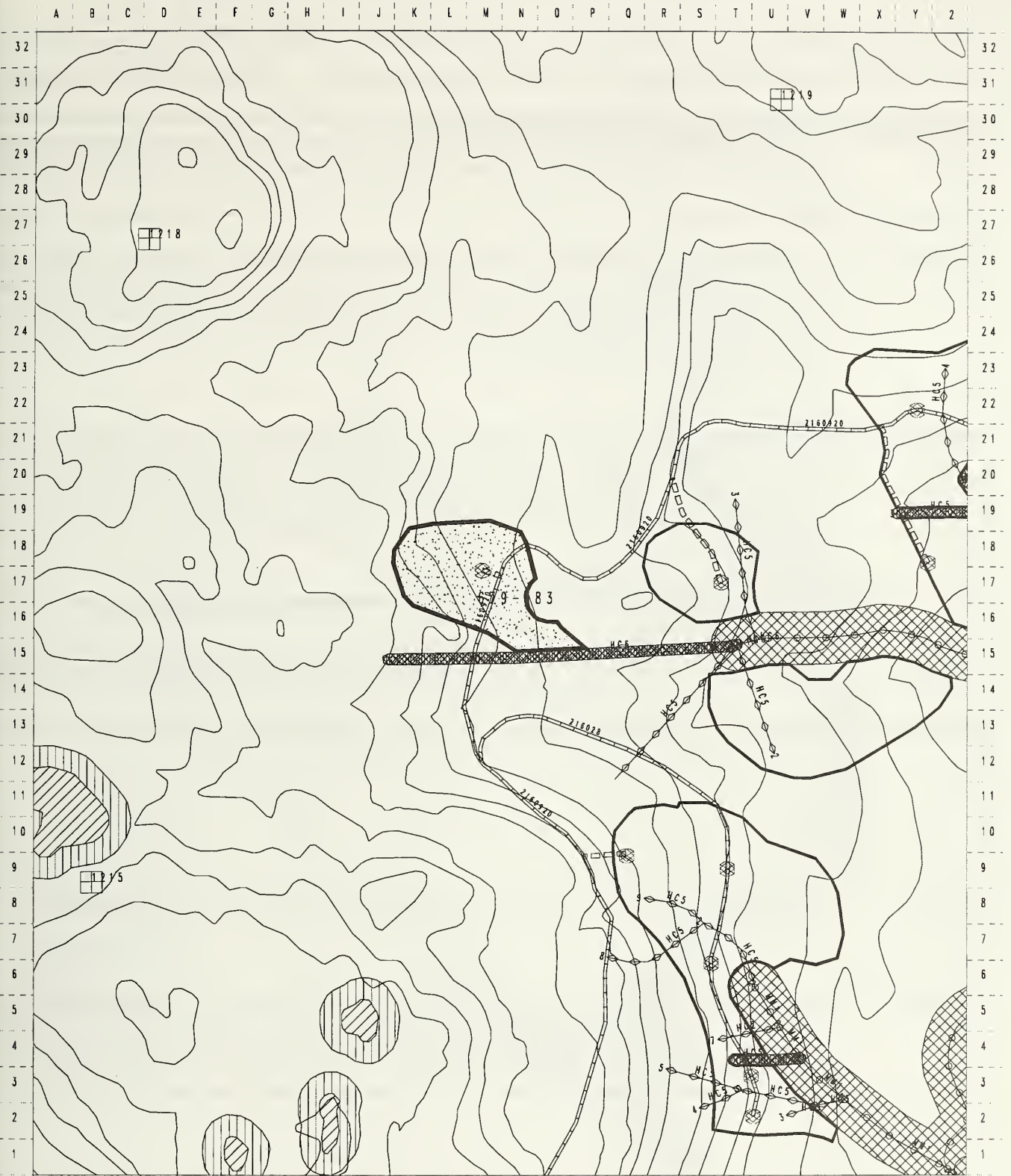
PHOTO YR/#: '71(51)-1472-45/'91-390-223 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68002-025 , high windthrow risk. Productivity of site is low. Uneconomic, low volume area surrounding. Maintain setting width between units, unless can be connected into one.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas 5-35%) and 86CD(Kaikli-Grindell 5-60%). Partial suspension for forested wetland (BMPs 12.5, 13.9). Concerns whether adequate tail holds and anchors for guy lines for suspension. Probable stream(s) needing protection (BMP 13.16). May be slight potential to expand unit. Third order watershed E92A will have about 227% cumulative effect under alternative 3 (BMP 12.1; TLMP 1997). Minor amounts of Kaikli soils present (TLMP 1997).
K.Buckley, 8/96	FISHERIES: GIS review shows potential for one class III orange/ white stream. The north slope break of this stream should be the unit boundary.
C. Tighe, B.Johnston, A.Mueller 6/14/96	WILDLIFE:  This unit did not rate as a high priority area for wildlife because of its size of only 9 acres. It was not surveyed during 1995. Deer sign, browse, beds, and game trails seen in unit. Bear sign seen as well. One dead deer found in area. Fisheries crew reported seeing a mouse-like mammal along the creek. Sparse/scrub timber. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J.Baichtal          T.Fifield 10/28/96	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.          LANDS:          CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.          VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 10% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. PCT at 25+ years.



# Chasina Study Area Interim Layout NOI Unit 679-383 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

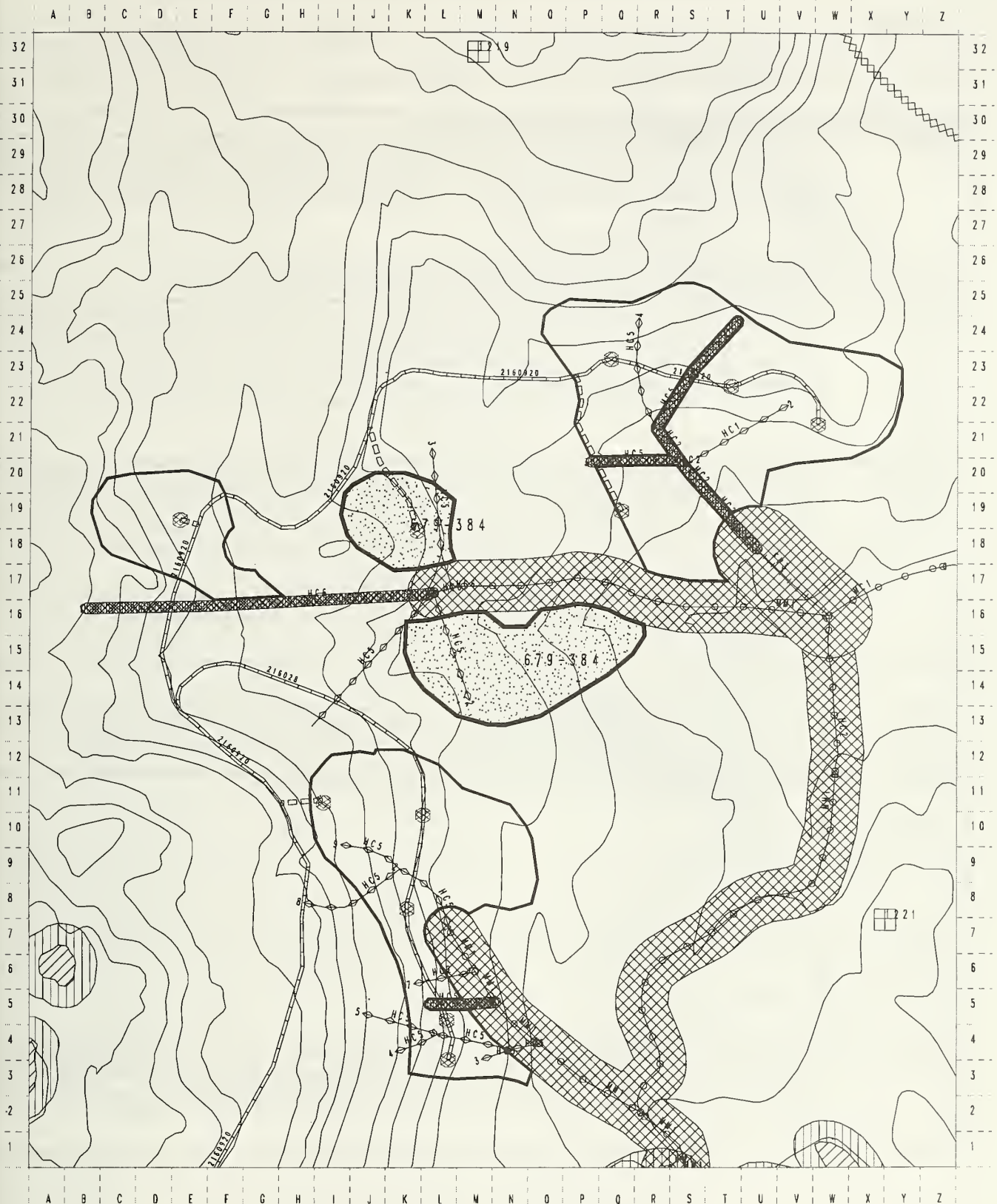
VCU-UNIT#: 679-384      ACRES: 14      VOL: 210      MBF      ALTERNATIVES: 3, 6

PHOTO YR/#: '71(51)/1472-45/'91-390-224      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: RS/HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68002-019, low windthrow risk. Productivity of site is low. Maintain setting width between units. Uneconomic, low volume area surrounding. Depending on final road location - may want to drop portion north of northernmost creek.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%) and 86CD (Kaikli - Grindall 5-60%). Partial suspension for forested wetlands (BMP 12.5, 13.9). Concerns whether adequate tail holds and anchors for guy lines for suspension. Potential to expand unit to limits of merchantable timber. Protection of streams as designated by fisheries (BMPs 12.6, 12.6a, 13.16). Third order watershed E92A will have about 27% cumulative effect under alternative 3 (BMP 12.1; TKLMP 1997). Shovel yarding must meet standards of slopes, drainages, topography, walking on waste wood to protect wetland soils, etc., per BMP 13.9. Minor amounts of Kaikli soil present (TLMP 1997).
K. McCartney, J. Frank, 8/1/95 K.McCartney, S.Deck, K.Kitchel, 6/14/96	FISHERIES: Stream 1 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Above the confluence with stream 3, stream 1 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Above the confluence with stream 4, stream 1 was a class III orange/ white,. Stream 1 is outside the unit boundary at this point. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16). Road crossing stream 1 will require fish timing (BMP 14.14).
C.Tighe, B.Johnston, A.Mueller 6/14/96	WILDLIFE:  This unit did not rate as a high priority area for wildlife due to its low volume class. It was not surveyed during 1995. Deer and bear sign seen in unit: scat, pellets, beds, and trails. One dead deer found near unit. Fisheries crew reported seeing a mouse-like mammal in the area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required. Shovel yard eastern 1/2 is an option. South portion prescribed as helicopter may be cable option. Unit is part of a complex of units where uneconomical if not all yarded. Close road after yarding - no future settings available. PCT at 25+ years.

# Chosina Study Area Interim Layout NOI Unit 679-384 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Korst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

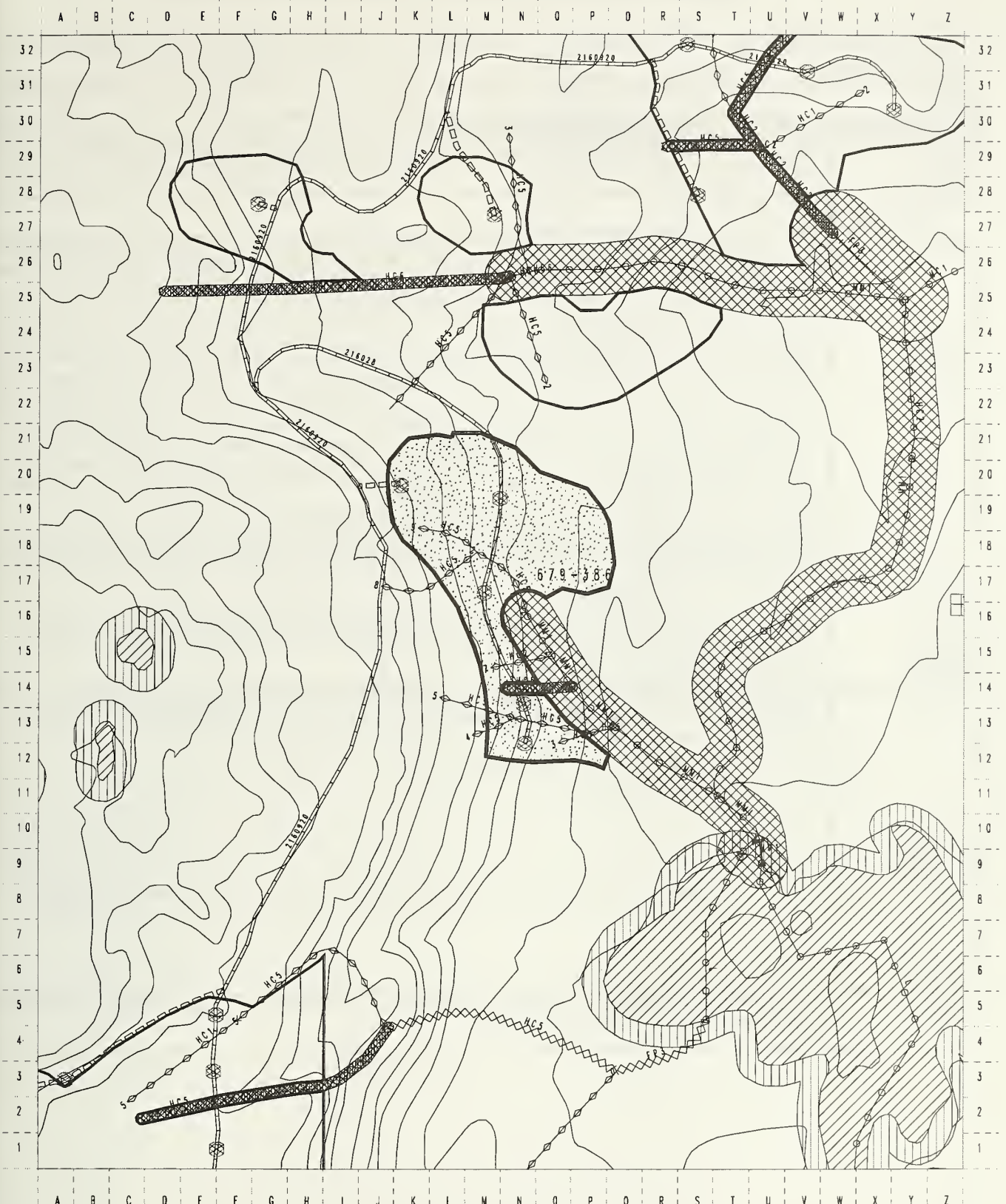
VCU-UNIT#: 679-386    ACRES: 19    VOL: 375    MBF    ALTERNATIVES: 3, 6

PHOTO YR/#: '71(51)-1472-45/'91-390-224    1/4 QUAD: CRG A-1 NE 1/4    LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68002-010, moderate windthrow risk, portion downhill yarded. Productivity of site is moderate. Partial cut buffer. Maintain setting width between units, or join with unit 384. Uneconomic, low volume area surrounding. Adjust road upslope as far as possible. May have to drop steep center and area to the west above it. Reach up to NW as far as possible. Optional western road coming from the south may replace eastern bottom road. Maintain YC component by planting. Commercial thin if uphill.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), with 86CD (Kaikli - Grindall 5-60%) and 3D(Vixon-Traitors 35-60%) . Steeper slopes and McGilvery noted by silviculture. Partial suspension for forested wetlands, MMI3, and McGilvery (BMPs 12.5, 13.9; TLMP 1997). Concerns whether there are adequate tail holds and anchors for guy lines to obtain suspension. Better timber to NW may be limited by reach from the road. May need to extend roading to S because of curve of hillslope (BMP 14.2). Protect streams per fisheries (BMPs 13.16, 12.6a). Third order watershed E92A will have about 27% cumulative effect under alternative 3(BMP 12.1;TLMP 1997). Minor amounts of Kaikli soils present (TLMP 1997).
K. McCartney, J. Hannon, 8/1/95	FISHERIES: Streams 1 (outside the unit) and 2 are class I blue/white TTRA. They require 120' TTRA buffers (BMP 12.6). Streams 6 is a class III orange/ white that is 5 feet wide, has 13 feet of incision, and 15% gradient. Stream 6 requires a slope break buffer. Stream 7 was a class III orange/white, under the new TLMP (1997) standards stream 7 is a class IV orange/ white that is 3 feet wide, has 6 feet of incision and 8% gradient. Stream 7 is flagged orange/ white to provide additional resource protection. Streams 3, 4, 5, 8, and 9 were class III green/white, under the new TLMP (1997) standards these streams are class IV green/ white. The orange/ white streams require directional falling, and split yarding or full suspension over, and immediate removal of introduced logging debris (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced logging debris before the end of the operating period or before the yarder leaves the operating area (BMP 13.16, 12.6a).
C.Tighe, B.Johnston, A.Mueller 6/14/96	WILDLIFE:  This unit did not rate as a high priority for wildlife due to its low volume class. It was not surveyed in 1995. Deer and bear sign seen in unit: trails, scat, pellets, beds. One dead deer found near unit. Fisheries crew reported seeing a mouse-like mammal in the area. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut. Complicated yarding near buffers and steep cliffs at the north end. Roading options and steep areas may force a reconfiguration of unit. Part of unit complex where economical only if all units are harvested. Retain YC seed trees along perimeter. Monitor for possible planting of YC. PCT at 25+ years.

# Chasina Study Area Interim Layout NOI Unit 679-386 Alt 3

Mapscale 1:7920 (8 inch to Mile)





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-392 ACRES: 49 VOL: 1800 MBF ALTERNATIVES: 3, 4, 6

PHOTO YR/#: '71(51)-1472-44;2090-167 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS, SL, SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68002-008, moderate windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is high. Protect karst features. Even-aged stand of VC 6: too large for partial cut prescription.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 3D (Vixen - Traitors 35-60%), with 550C (StNicholas - Kaikli 5-35%) and 4D (Helm 35-60%) on the north end, and 28 (McGilvery & Tolstoi 5-60%) on the south end. Partial suspension for forested wetlands and McGilvery (BMPs 12.5, 13.9; TLMP 1997). Shovel yarding per BMP 13.9. Unit lies in third order watersheds E92A and 000Z. Both will have about 27% cumulative effect under alternative 3(BMP 12.1; TLMP1997). May need field review during layout as may be more wet than mapped (BMP 13.2; TLMP 1997) . Defer harvest on Kaikli soils (TLMP 1997). Additional information is filed in the reconnaissance folder.
J. Frank, M. Pacheco, D. Kennemore 7/25/95	FISHERIES: Stream 1 was a class III orange/ white, under the new TLMP (1997) standards it is a class IV orange/ white that is 3 feet wide, incision was not collected, and has 8% gradient. Stream 1 is flagged orange/ white to provide additional resource protection. Stream 2 was a class III orange/ white, under the new TLMP (1997) standards it is a class IV orange/ white that is 3 feet wide, incision was not collected, and has 8% gradient. Stream 2 is flagged orange/ white to provide additional resource protection. Stream 3 was a class III orange/ white, under the new TLMP (1997) standards stream 3 is a class IV orange/ white because it is 3 feet wide, incision was not collected, and has 8% gradient. Stream 3 is flagged orange/white to provide additional resource protection. Stream 4 is a class III orange/ white, that is 5 feet wide, incision was not collected, and has 31% gradient. Stream 4 requires a slope break buffer. Stream 5 was a class III green/ white, under the new TLMP (1997) standards stream 5 is a class IV green/ white.  The orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The green/ white stream requires directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Pacheco, J.Baichtal 7/25/95 C.Tighe, A.Mueller 6/20/96	WILDLIFE:  Game trails common. Wolf howls heard. Karst in area. To provide for adequate snag density and distribution within the VCU, recommend leaving 0.1 acre or larger snag patch for each 10 acres of unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/20/96 Deer sign, pellets: beds, browse and trails seen in unit. Karst in unit. Blueberry very heavily browsed.
J.Baictal          T.Fifield 10.28/96	GEOLOGY/MINERALS: Unit is underlain by minor amount of carbonate interbedded with phyllite. Forest geologist visited southern half of unit. Low to moderate vulnerability karst found. No significant karst resources described by other resource specialists. Partial suspension is required.          LANDS:          CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.          VISUALS:
G.Lawton 12/97	PRESCRIPTION: Partial suspension required for forested wetlands and McGilvery. Shovel yarding per requirements BMP 13.9. Type D clearcut. May be too wet for shovel yarding.



Mapscale 1:7920 (8 inch to Mile)

Mapscale 1:7920 (8 inch to Mile)



Created by Solly Merfeld on February 02, 1998

# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-409      ACRES: 80      VOL: 1800      MBF      ALTERNATIVES: 3, 4, 5, 6

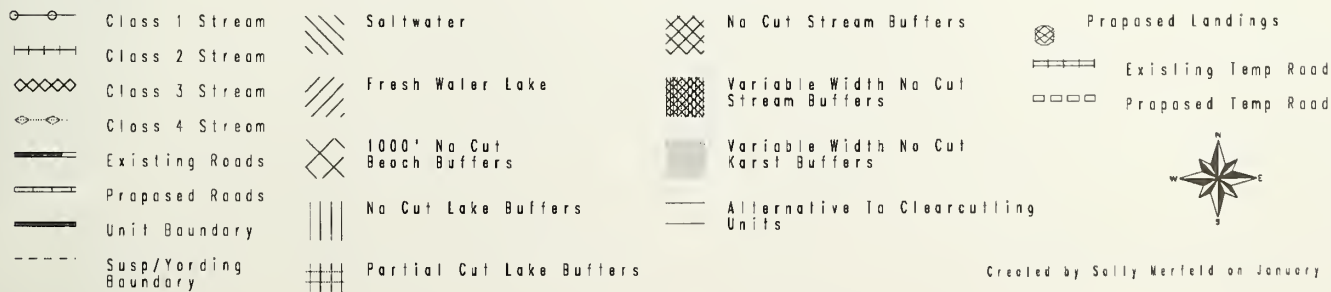
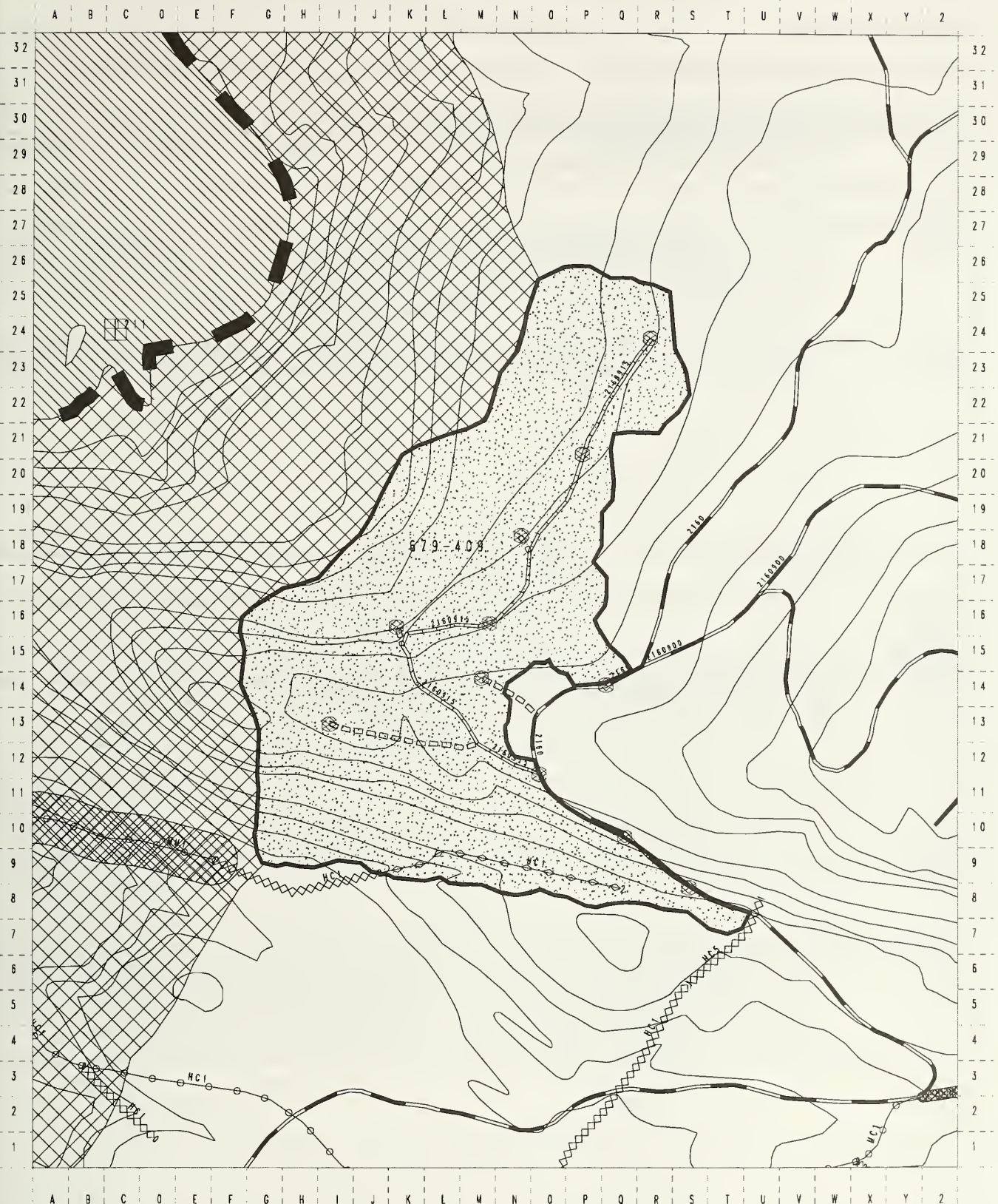
PHOTO YR/#: '71(51)-1472-43      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: RS,LS,SL

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 12/97	SILVICULTURE/TIMBER: 67902-132, high windthrow risk, minor portion downhill yarded. Unit changed to provide proportionality of volume classes. Retain stand structure for wildlife where feasible. Productivity of site is high. Adjacent to previous cuts. Should meet greenup requirements. Adjacent recent salvage sale. Stay out of estuary buffer. High mistletoe content.
J. Oien 5/96	ROADS: Because of karst development within the unit, road construction should minimize clearing limits and disturbance during construction. Road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to the alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be approved by both the Forest Geologist and the District Fisheries Staff.
Field D.J.Landwehr 10/13/95 EIS R.Johnson	SOILS/WATERSHED: Minimum of partial suspension throughout unit (BMPs 13.9, 13.5; TLMP 1997)). Full suspension is recommended on south facing slope in the southwest portion of the unit (BMPs 13.9, 13.5). Green and white protection on stream on east boundary (BMP 13.16). Orange and white protection for large stream on south boundary (BMP 13.16). Orange and white protection for larger stream on north side of ridge, and green and white for smaller stream on north side of ridge. Design unit to minimize blowdown, which is especially likely to occur on karst. Third order watershed 000Z. Additional information is filed in the reconnaissance folder.
M.Driscoll 8/97	FISHERIES: Stream 1 is a class III orange/ white, the stream is outside the unit boundary. Stream 2 is a class II orange/ white that requires a 120' AHMU buffer, this is outside the unit boundary (BMP 12.6). Stream 2 is a class III orange/ white, this is outside the unit boundary. In side the unit stream 2 is a class IV green/ white. The orange/ white streams requires directional falling and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16).
M.Pacheco, J.Baichtal 7/26/95 D.Parker, M.Pacheco, B.Johnston 8/16/95 M.Dillman, A. Mueller, 6/1/96 B.Johnston, A. Mueller 6/6/96 T.Belfield 7/96	WILDLIFE:  Deer signs and game trails in area. Wolf killed deer found. Also marbled murrelet eggshell fragments were found near the units western boundary. Karst throughout unit. Unit identified as important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Unit is within a half mile of known bald eagle nest. Road construction must be accomplished in accordance with the requirements of the Bald Eagle Protection Act and written coordination with the U.S. Fish and Wildlife Service must be documented. Any road construction must also comply with the MOU between the U.S. Fish and Wildlife Service and the U.S. Forest Service. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. A marbled murrelet dusk and dawn survey was done from the Lancaster cabin. No birds were recorded. A sensitive plant survey was done by the botanist in this unit but no sensitive plants were found. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Unit underlain by marble. Moderately well developed epikarst on top of ridge, thin shallow soils. Moderate vulnerability karst throughout unit. Partial suspension required within unit as a minimum.  LANDS:
T. Fifield 5/96	CULTURAL: This unit was surveyed in 1996 to determine if historic materials associated with the Gladstone Prospect are located in or near the unit. No cultural materials were noted. There are no concerns with this unit as planned.  VISUALS:
G. Lawton 12/97 D.J.L., R.J. 10/95	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 5-10% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Dropped 5 acres south side - no tailholds (low volume). Monitor for potential spruce planting. Release treatment possible for mistletoe. PCT at 15 years.



# Chasina Study Area Interim Layout NOI Unit 679-409 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

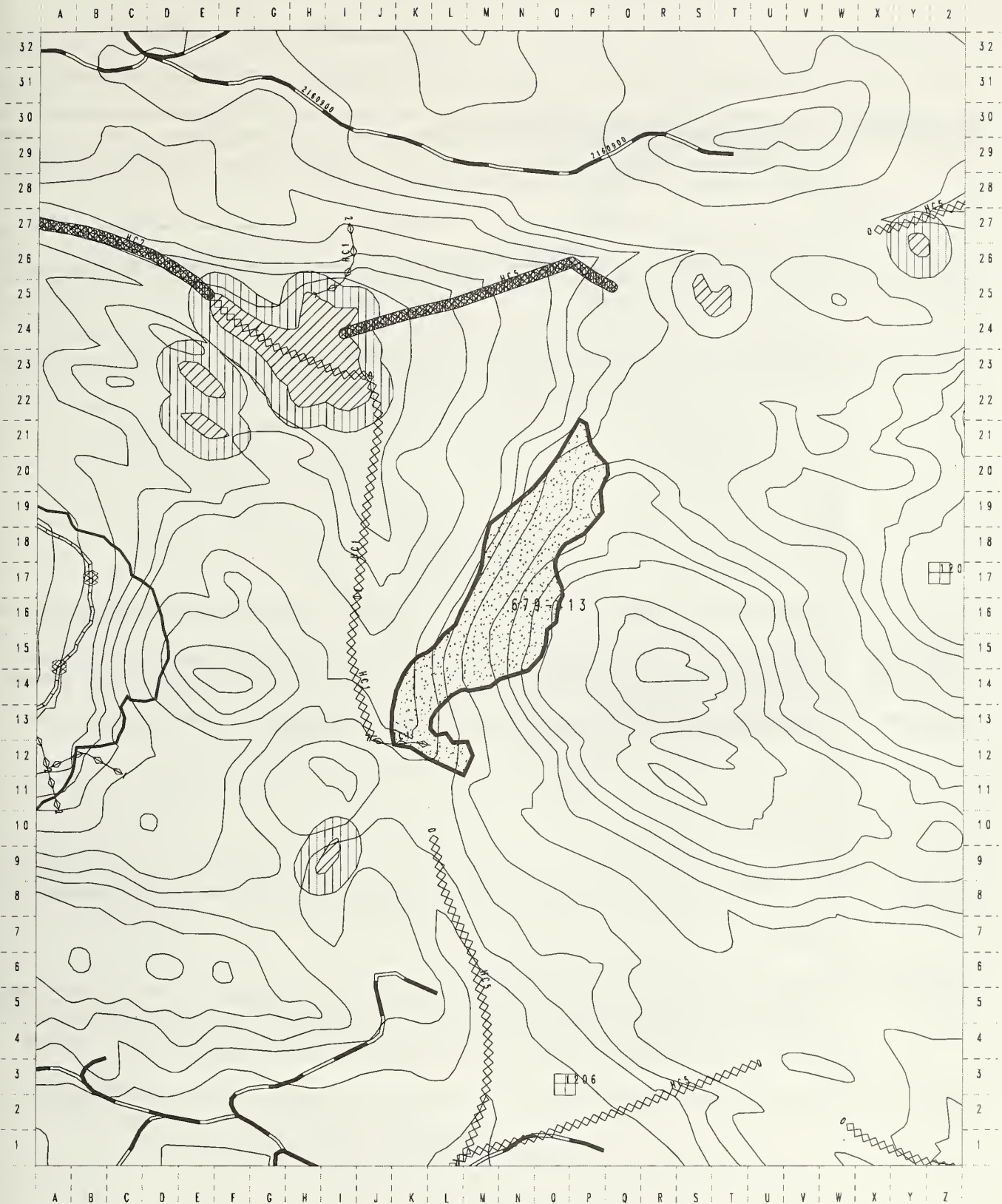
VCU-UNIT#: 679-413      ACRES: 13      VOL: 156      MBF      ALTERNATIVES: 2, 3, 4, 5, 6

PHOTO YR/#: '71(51)-1472-42/'91-390-163      1/4 QUAD: CRG A-1      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 12/97	SILVICULTURE/TIMBER: 67902-125, low windthrow risk. Productivity of site is low. Uneconomic, low volume area surrounding. Field checked alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 74E (Kupreanof 60-75%), with 4D (Helm 35-60%), 86CD (Kaikli - Grindall 5-60%), 244CD (Hydaburg-Grindell 5-60% and 48C (Helm-Kitkun 5-35%). Partial suspension for forested wetlands and slopes (FSM 2554; BMPs 12.5, 13.5, 13.9). May need slope break buffer on stream and V-notch on southwest side of unit. May need field review during layout because of potential unstable soils and rock outcrops (BMPs 13.2, 13.5). Additional information is filed in the reconnaissance folder. Minor amounts of Kaikli and Kitkun soils present (TLMP 1997).
J. Bauers 8/97	FISHERIES: Stream 1 is a class IV green/ white that requires directional falling and split yarding(where practical) or partial suspension. Clean class IV streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Pacheco 7/26/95 A. Mueller, B. Johnston 7/20/96	WILDLIFE:  Deer and bear sign in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G. Lawton 12/97	PRESCRIPTION: Clear-cut w/ reserves: retain 5% of cutting unit where fesaible and safe. Areas should be in clumps or patches, buffers or blind-leads, and dispersed. Type clearcut w/reserves. Band of small timber to be left along boundary for cedar seed supply. Mitigation for soils protection: drop cliffs out of unit - results in narrow unit, helicopter yard, full suspension, cedar seed trees left on entire perimeter. Overstory removal with 18" DBH limit is option. Reserve trees for wildlife structure available in perimeter because smaller unit anticipated in layout process. Monitor for possible YC planting. PCT in 25+ years.

# Chasing Study Area Interim Layout NOI Unit 679-413 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-414      ACRES: 37      VOL: 527      MBF ALTERNATIVES: 2, 3, 4, 5, 6

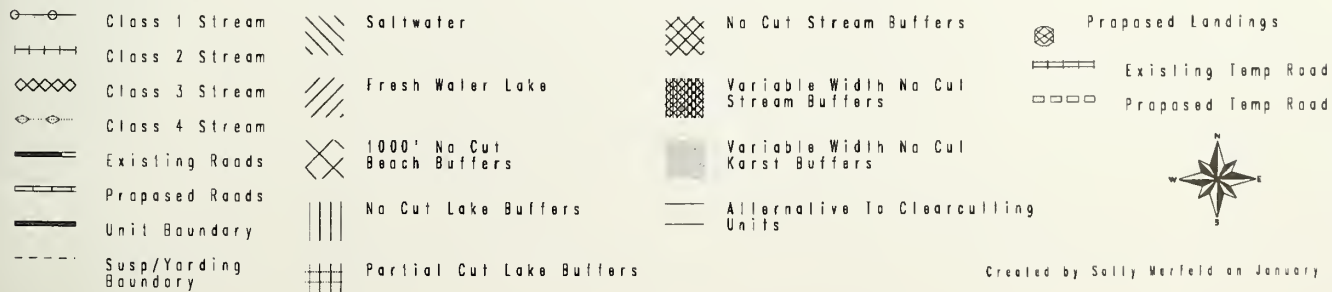
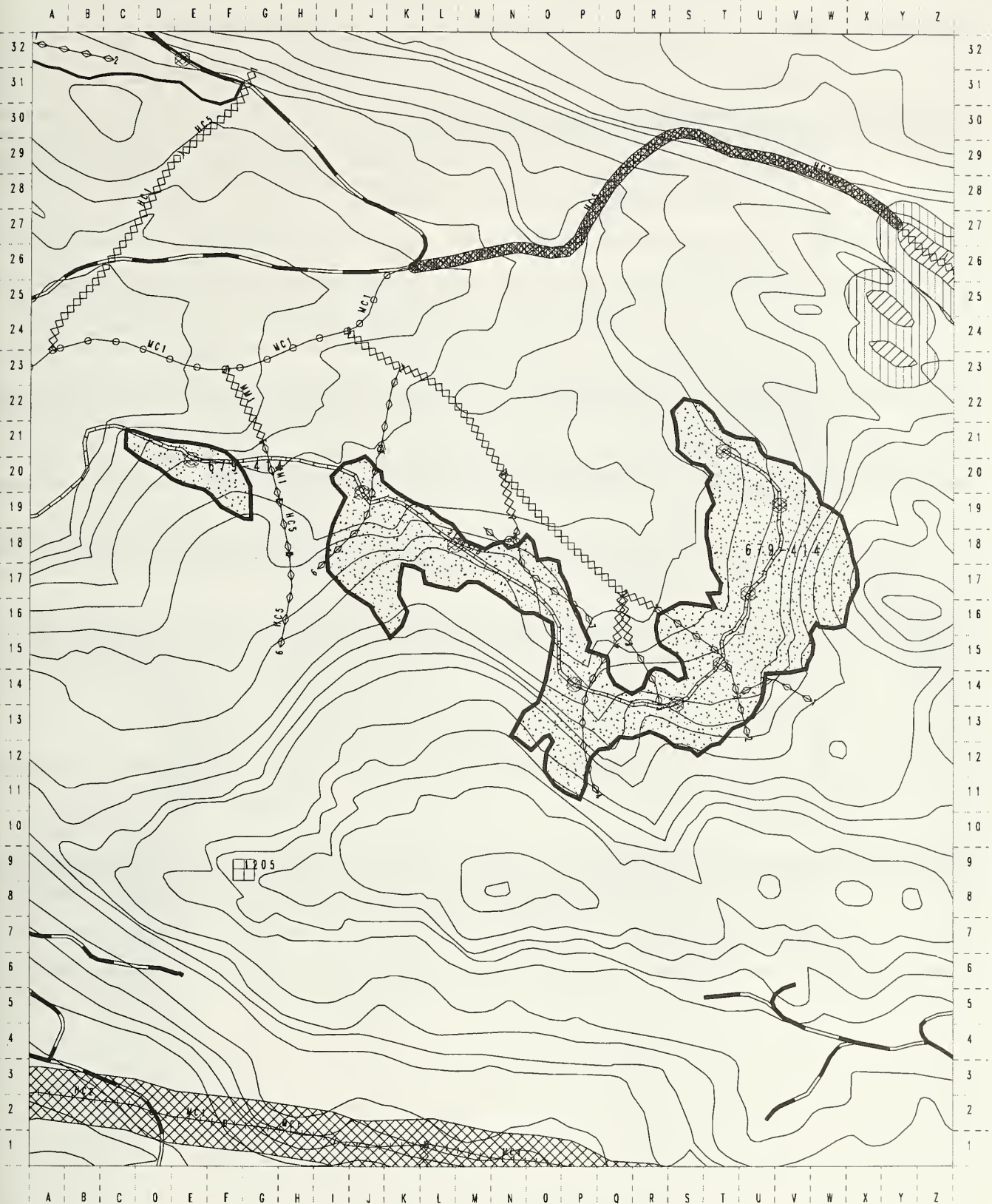
PHOTO YR/#: '71(51)-1472-42/'91-390-163      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G. Lawton 12/97	SILVICULTURE/TIMBER: 67902-103, low windthrow risk, portion downhill yarded. Productivity of site is low. Unecologic, low volume area to north and between western area settings. Downhill yarding shortens road (more feasible - slopes). Retain cedar component through planting and/or seed trees remaining.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily 48C (Helm - Kitkun 5-35%) and 57D (Petrel 35-60%), with 3D (Vixon - Traitors 35-60%), 33D (StNicholas - McGilvery 35-60%), 86CD Kaikli-Grindell 5-60%). Unit basically forested wetland. Minimum partial suspension for wetlands, inclusions of MMI3, and McGilvery (BMPs 12.5, 13.9; TLMP 19917. Unit includes muskeg areas, in addition to low volume areas already deleted, that should be avoided (BMP 12.5). See fisheries for protection of streams (BMP 13.16). Minor amounts of Kaikli and Kitkun soils present (TLMP 1997).
J. Bauers 8/97	FISHERIES: Stream 1 is a class IV green/ white. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 4 is a class IV green/ white. Stream 5 is a class IV green/ white. Stream 7 is a class IV green/white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
M. Pacheco 6/28/95 M. Dillman, A. Mueller 5/31/96 T. Belfield 7/96	WILDLIFE:  Game trails and bear scat seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/31/96 Deer sign seen in unit. This unit was surveyed by the botanist and sensitive plants ( <u>Platanthera chorisiana</u> ), choris bog-orchids, were found in the vicinity.
J. Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.  LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G. Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 5% of cutting unit(along edge), where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut, leave up to 20" DBH seed trees on edges of unit for cedar seed source in this anticipated narrow unit. Minimum of partial suspension required. Protect muskeg areas included in unit. Presale needs to consider the many stream segments for mitigation.



# Chosina Study Area Interim Layout NOI Unit 679-414 Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-425      ACRES: 42      VOL: 1134      MBF      ALTERNATIVES: 3, 4, 6

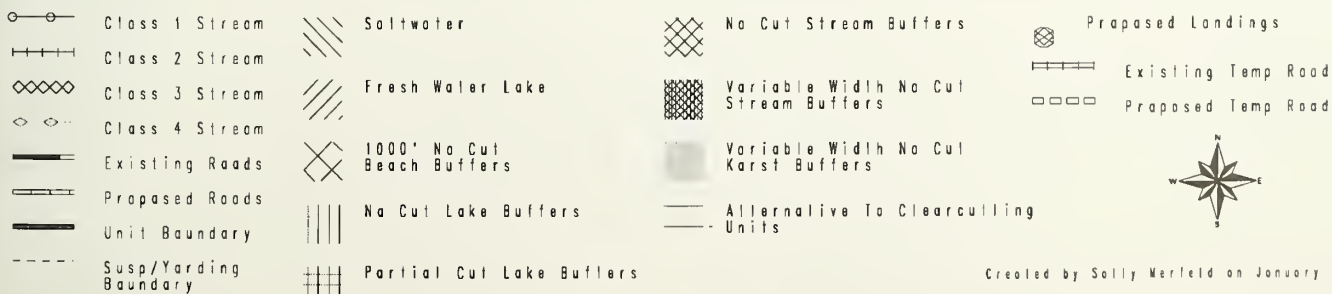
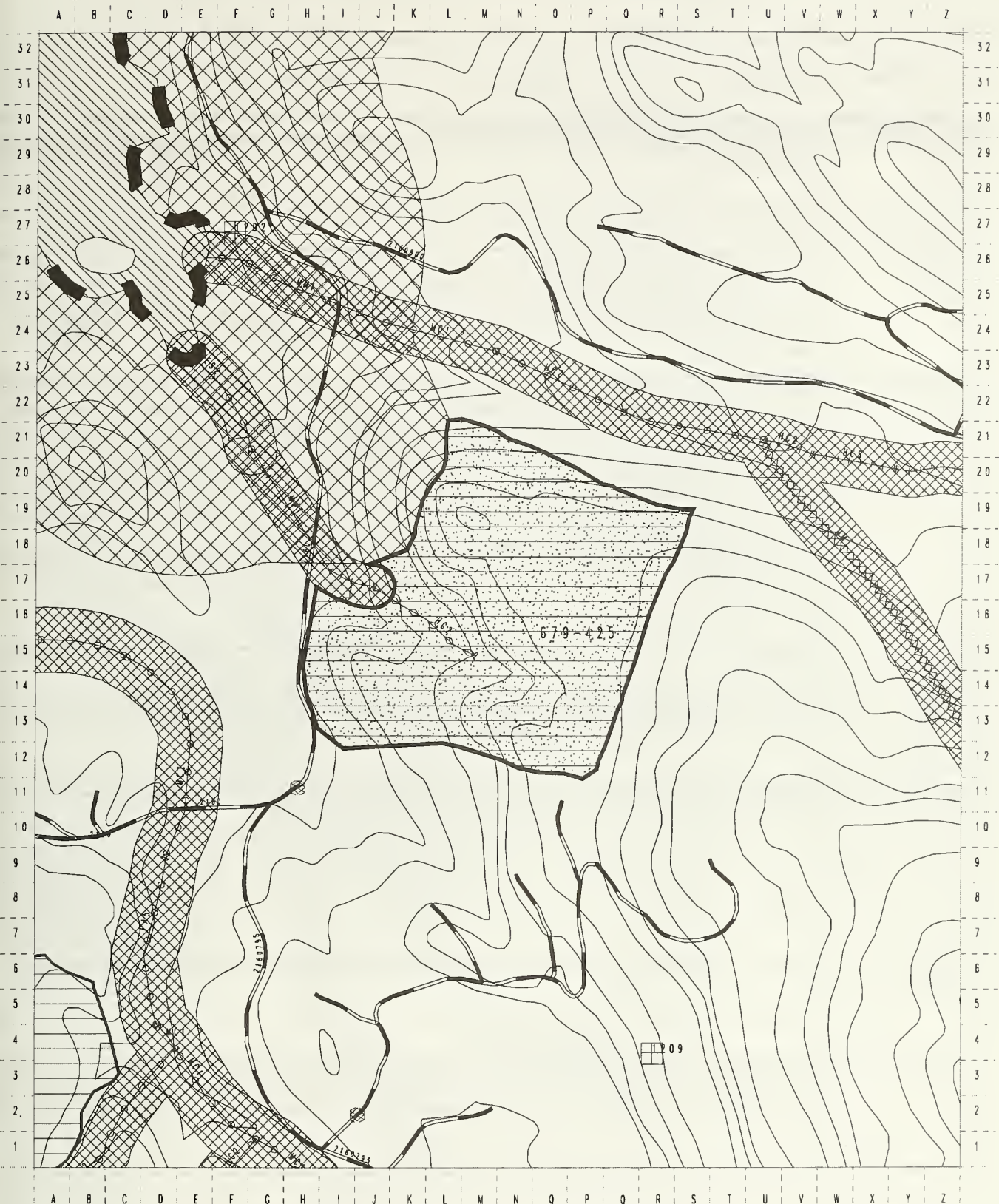
PHOTO YR/#: '91-390-163      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-035, high windthrow risk, portion downhill yarded. Retain stand structure for wildlife where feasible. Eliminate cut in various buffers. Field checked alternative regeneration methods. Maintain setting width between units. Productivity of site is moderate. Check option of unevenaged mgmt / OSR. East side deferred for wildlife corridor and watershed concerns. Spur road preference would come from the east to access deferred area in the future.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 3D (Vixen - Traitors 35-60%) N 2/3 of unit; 32C (StNicholas - McGilvery 5-35%), and 13 (SaltChuck 0-10%) S 1/3 of unit. Partial suspension for forested wetlands, and McGilvery (BMPs 12.5, 13.9; TLMP 1997). Stream and V-notch on N boundary probably needs a slope break buffer (BMP 12.6a). Protection of streams per fisheries (BMPs 13.16, 12.6, 12.6a). North portion of unit in third order watershed H63A; south end of unit in third order watershed H62A. Unit will be in ATC study.
M. Driscoll 8/97	FISHERIES: Stream 1 is a class II blue/white TTRA that flows along the north boundary of the unit; it requires a slope break plus 100' buffer (BMP 12.6). Stream 2 is a class I blue/ white that requires a 100' TTRA buffer, inside the unit stream 2 is a class IV green/ white. The green/white streams require directional falling, and split yarding (where practical) or partial suspension. Clean these streams before the end of the operating period or before the yarder leaves the area (BMP 13.16, 12.6a).
M.Dillman, J.Wrate 7/12/95 C.Tighe, B.Johnston, A. Mueller 5/16- 17/96	WILDLIFE:  Deer sign seen in unit. Unit identified as an important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Two different trap lines were set up this unit to catch Prince of Wales flying squirrels. We were unsuccessful. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96  T.Fifield 10/28/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Soils reported moderate vulnerability karst along southern unit boundary. Partial suspension required over top of karst. Unit not visited by Forest Geologist.  LANDS:  CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Overstory removal cut maintain 75% of BA. Uneven-aged amnagement bt ITMAreas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Partial suspension required. Stay off of steep slopes to the west. Deferred (original unit 110 acres) eastern half of unit for watershed impacts. Stay out of V-notch lip to the north. Part of ATC study. See prescription for detailed instructions (treatment #4). Additional 25% removed in 30-40 years. Monitor ATC study.



# Chosina Study Area Interim Layout NOI Unit 679-425 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

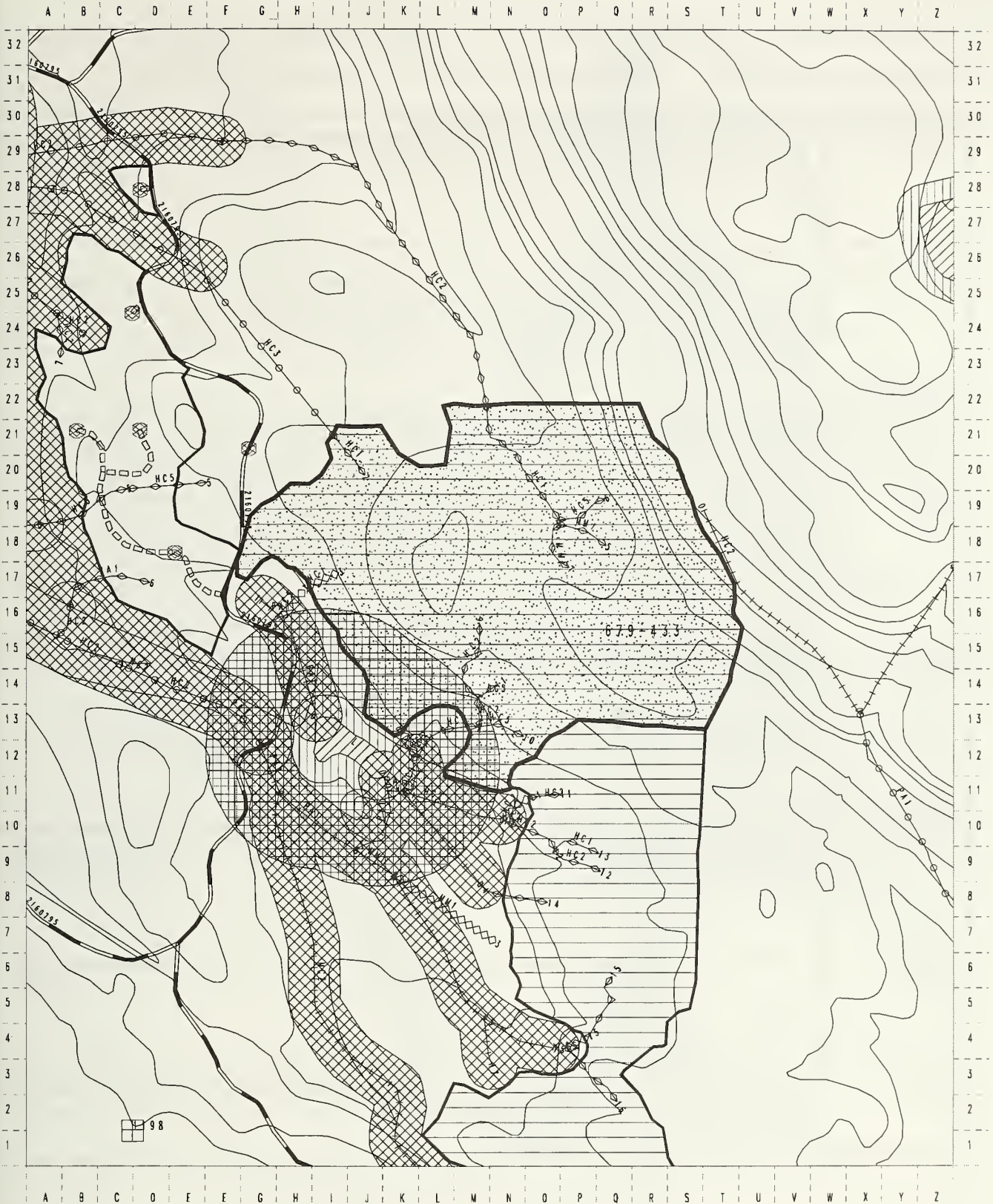
VCU-UNIT#: 679-433      ACRES: 62      VOL: 1204      MBF      ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: '91-390-165      1/4 QUAD: CRG A-1      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-83, low windthrow risk. Productivity of site is high. <u>Partial cut buffer</u> . Maintain setting width between units.
J. Oien 5/96	ROADS: Evaluate temporary roads for specified road criteria.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily as 1C (Vixen 5-35%), with 550C (StNicholas - Kaikli 5-35%), 442D (Ulloa - Sarkar 35-60%), 4C (Helm 5-35%). Karst was not found by the geologist. Partial suspension for forested wetlands (BMPs 12.5, 13.9). Probable adjustments to unit boundaries due to low volume wetlands, particularly on the E and S. Probable cliffs in NW corner that will need protection. Protection of pond in SW corner and streams in unit per fisheries (BMPs 12.6, 12.6a, 13.16). Unit in third order watersheds H62A and H54A. Minor amounts of Kaikli soils present (TLMP1997). Unit will be helicopter yarded in ATC study.
G. Pierce 8/97	FISHERIES: Stream 1 is a class II blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 2 is a class IV green/ white. Stream 5 was a class III orange/ white, under the new TLMP (1997) standards stream 5 is a class IV orange/ white that changes to class IV green/ white. The lower section of stream 5 is flagged orange/ white to provide additional resource protection. Stream 6 is a class IV green/ white. Stream 7 is a class IV green/ white. Stream 8 is a class I blue/ white that requires a 120' TTRA buffer. Stream 9 is a class I blue/ white that requires a 120' TTRA buffer. Stream 9 turn into a class III orange/ white and then to a class IV green/ white at the junction with stream 9b. The class III orange/white section of stream 9 is now classified as a class IV orange/ white under the new TLMP (1997). This section of stream 9 is flagged orange/ white to provide additional resource protection. Stream 9b is a class IV green/ white. Stream 10 is a class IV green/ white. The lake is class II TTRA that requires a 100'/ 400' uneven age cut (BMP 12.6). The orange/ white streams require directional falling and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 7/13/95 C.Tighe, B.Johnston, A.Mueller 6/15/96	WILDLIFE:  Game trails, beaver ponds with beaver seen at lake on units southern boundary. Common mergansers on lake. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/15/96 This unit has many game trails, deer pellets and beds. Blueberry and skunk cabbage have been browsed. Some bear sign in unit.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Part of ATC study, uneven-aged management, 25% BA retained in various clumps. Drop two acres in center due to unsuitable, uneconomical timber. Put 100' no cut buffer and 400' partial cut buffer around lake to the SW. Monitor ATC study and possible PCT in 20 years. Helicopter yarding only with no roads in unit. See prescription for ATC details (treatment 6).

# Chosina Study Area Interim Layout NOI Unit 679-433 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-437E      ACRES: 65      VOL: 1780      MBF      ALTERNATIVES: 3,4,5,6

PHOTO YR/#: '91-390-145      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-035, low windthrow risk due to terrian and lack of post evidence. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Maintain setting width between units. Complex streams and protection thereof. Option: unevenaged mgmt. High mistletoe defect in west side. Western half large diameter, eastern half smaller diameter.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (StNicholas - Kaikli 5-35%), 62 (Karheen - McGilvery 0-70%), 1C (Vixen 5-35%). Karst, reported by fisheries and geology. Partial suspension because primarily forested wetlands, and includes McGilvery and karst (BMPs 12.5, 13.9; TLMP 1991). See fisheries for stream protection (BMPs 12.6a, 13.16). Minor amounts of Kaikli and Karheen soils present (TLMP 1997). Unit lies in third order watersheds H62A and H61A. Unit expanded by presale following EIS review.
G. Pierce 8/97	FISHERIES: Stream 1 is a class I blue/ white that requires a 200' TTRA buffer due to it's deep V notch channel (BMP 12.6). Stream 2 was a class III orange/ white, under the new TLMP (1997) standards stream 2 is a class IV orange/ white, that becomes a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). The upper section of stream 2 is flagged orange/ white to provide additional resource protection. Stream 3 is a class IV green/ white. Stream 4 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 4 changes to class III orange/ white at 200' of elevation and becomes a class IV green/ white above. The class III orange/ white section of stream 4 is now classified as class IV orange/ white under the new TLMP (1997) standards. This section of steam 4 is flagged orange/ white to provide additional resource protection. Stream 5 is a class IV green/ white that flows into a karst sink hole. Stream 6 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6) inside the unit it is a class III orange/ white that becomes a class IV green/ white at it's headwaters. The class III orange/ white section of stream 6 is now classified as class IV orange/ white under the new TLMP (1997) standards. This section of stream 6 is flagged orange white to provide additional resource protection. The orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
C.Tighe 7/25/95 D.Parker, M.Pacheco, B.Johnston 8/4/95 C.Tighe, B.Johnston, A. Mueller 6/12/96	WILDLIFE:  Deer and bear sign seen in unit. Unit identified as important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Doe seen near unit 6/12/96. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Loosing karst stream into large karst collapse along northern unit boundary. Minimum 100 foot no harvest buffer along stream deleting this feature from the unit.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Dropped 5 acres of scrub in NE corner. Part of ATC study, uneven-aged management. Use various sized group selections to be harvested. Individual trees will also be marked for cutting in the remaining areas. 25% of the BA willbe retained totally by the use of these two methods. See prescription for details (treatment 8). Monitor for PCT in 20 years. No further commercial treatments this rotation.



# Chasina Study Area Interim Layout NOI Unit 679-437e Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-437W      ACRES: 47      VOL: 1259      MBF      ALTERNATIVES: 3,4,5,6

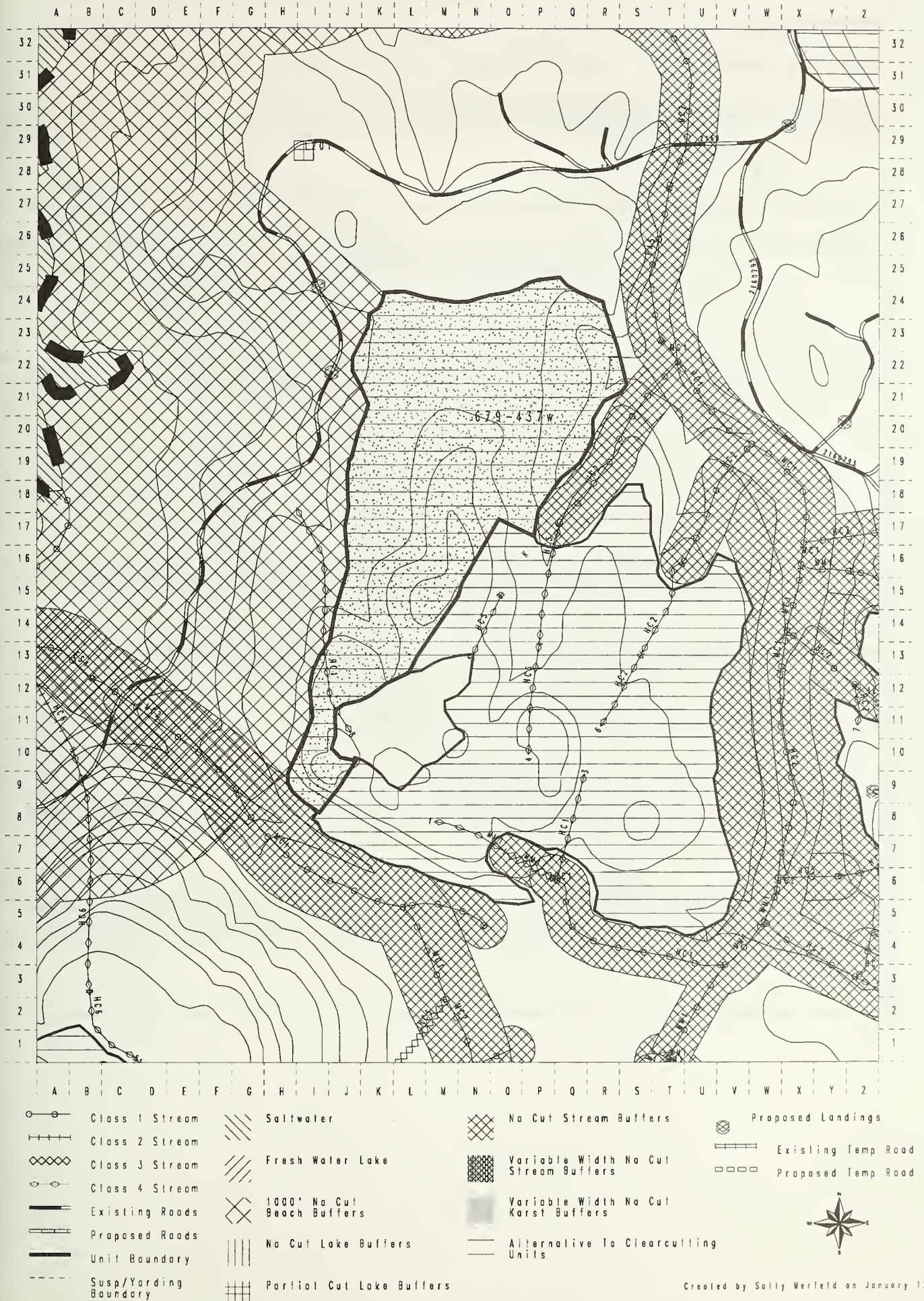
PHOTO YR/#: '91-390-145      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-035, low windthrow risk due to terrain and lack of past evidence. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Maintain setting width between units. Complex streams and protection thereof. Option: unevenaged mgmt. High mistletoe defect in west side. Western half large diameter, eastern half smaller diameter.
J. Oien 5/96	ROADS: No concerns.
R. Johnson 6/96	SOILS/WATERSHED: Soils mapped 550C (St. Nicholas - Kaikli 5-35%), 62 (Karheen - McGilvery 0-70%), 1C (Vixen 5-35%), 32C (StNicholas 5-35%). Karst reported by fisheries and geology. Partial suspension because primarily forested wetlands, and includes McGilvery and karst (BMPs 12.5, 13.9; TLMP 1997). See fisheries for stream protection (BMPs 12.6a, 13.16). Potential exists to expand unit to N. Minor amounts of Kaikli and Karheen soils present (TLMP 1997). Unit lies in third order watersheds H62A and H61A.
G. Pierce 8/97	FISHERIES: Stream 1 is a class 1 blue/ white that requires a 200' TTRA buffer due to it's deep V notch channel (BMP 12.6). Stream 8 is a class IV green/ white that flows into a Karst sink hole. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
C.Tighe 7/25/95 D.Parker, M.Pacheco, B.Johnston 8/4/95 C.Tighe, B.Johnston, A. Mueller 6/12/96	WILDLIFE:  Deer and bear sign seen in unit. Unit identified as important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Doe seen near unit 6/12/96. Maintain 1000 foot estuary buffer.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Loosing karst stream into large karst collapse along northern unit boundary. Minimum 100 foot no harvest buffer along stream deleting this feature from the unit.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Dropped 5 acres of scrub in NE corner. Part of ATC study, uneven-aged management. Use Individual tree marking for structural retention. Retain 25% of the BA. See prescription for details (treatment 3). Monitor for PCT in 20 years. No further commercial treatments this rotation.



# Chosino Study Area Interim Layout NOI Unit 679-437w Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

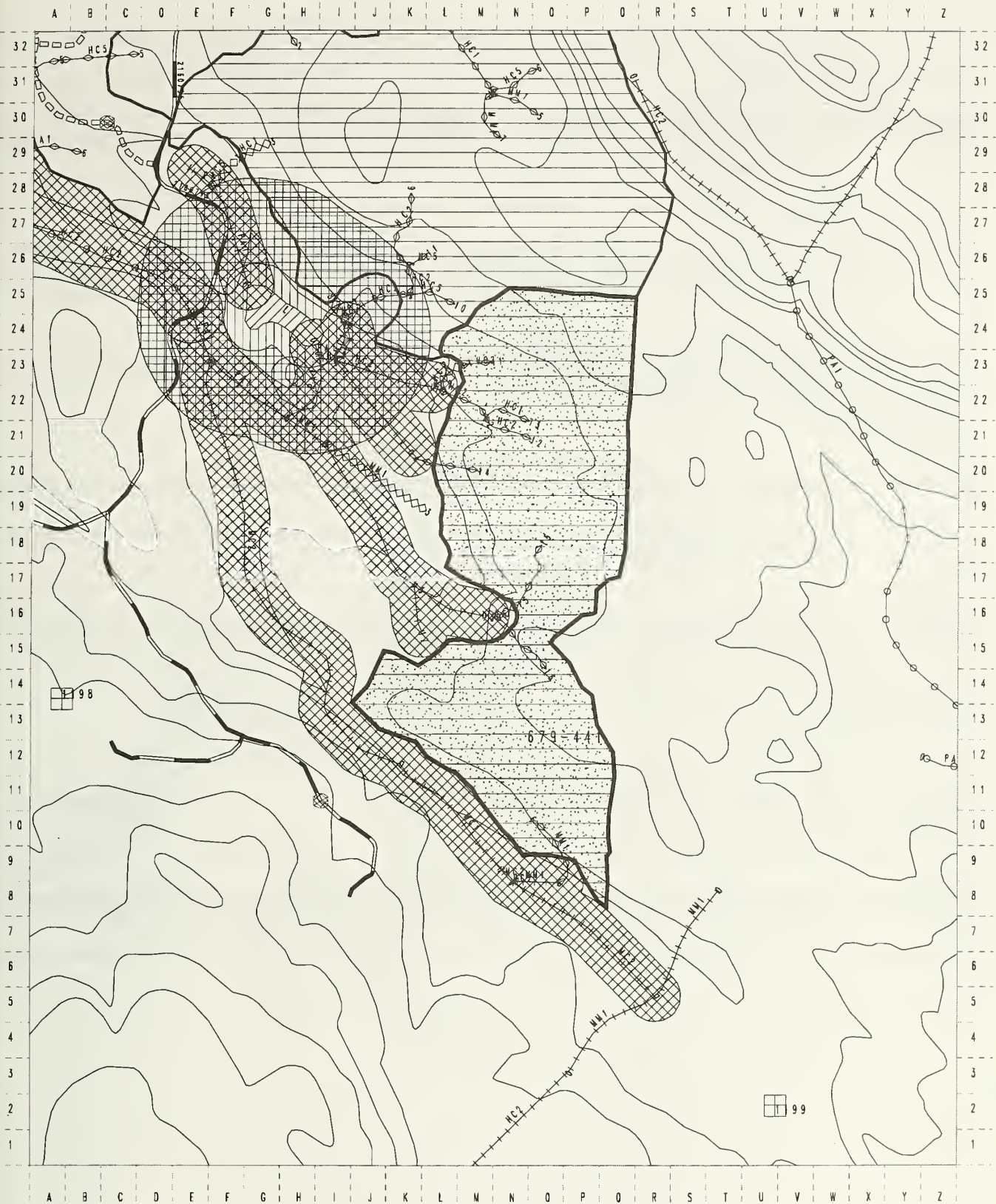
VCU-UNIT#: 679-441      ACRES: 46      VOL: 328      MBF      ALTERNATIVES: 2, 3, 4, 5, 6

PHOTO YR/#: '91-390-165      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-077, low windthrow risk. Productivity of site is moderate. PartiField checked alternative regeneration methods.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped primarily as 1D (Vixen 35-60%) and 4C (Helm 5-35%) with 1C (Vixen 5-35% and 85(Kina 0-35%). Partial suspension for forested wetlands (BMP 12.5 13.9). Soils of 48C (Helm -Kitkun 5-35%) in SE corner appears to be low volume wetland, and has been deleted (BMP 12.5). Potential to expand unit to SW probably not feasible if class I stream continues. Protection of streams per fisheries (BMPs 12.6a, 13.16). Unit in third order watersheds H62A, and H54A.
G. Pierce 8/97	FISHERIES: Stream 6 is a class II blue/ white that requires a 120' AHMU buffer (BMP 12.6). Stream 11 is a class IV green/ white. Stream 12 is a class II blue/ white that requires a 120' AHMU buffer (BMP 12.6), that turns into a class III orange/ white. Under the new TLMP (1997) standards this section of stream 12 is a class IV orange/ white. This section of stream 12 is flagged orange/ white to provide additional resource protection. Stream 12 it is a class IV green/white at its head waters. Stream 13 is a class IV green/ white. Stream 14 is a class IV green/ white that turns into a class II blue/ white outside the unit boundary. Stream 15 is a class IV green/ white. Stream 16 is a class IV green/ white. The orange/ white streams require directional falling and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 7/13/95 M.Dillman, B.Johnston 7/13/96	WILDLIFE:  Beaver ponds directly west of NW corner of unit. Deer sighted in muskeg north of unit. Bear signs in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 7/13/96 Bear/game trails throughout unit. This unit has a proposed road connection between private land and Forest Service land in it.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: WT outside NE stream buffers at south end are dropped already. Dropped 2 acres - wetland soils. Part of ATC study, uneven-aged management, 75% of the BA will be retained. Various sized group selections will be harvested to achieve this. Additional 25% will be removed in 30-40 years. No further commercial treatments this rotation. Monitor for PCT needs in 20 years. See prescription for ATC for details (treatment 9).

# Chosina Study Area Interim Layout NOI Unit 679-441 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-446      ACRES: 6      VOL: 80      MBF      ALTERNATIVES: 2,3,4,5,6

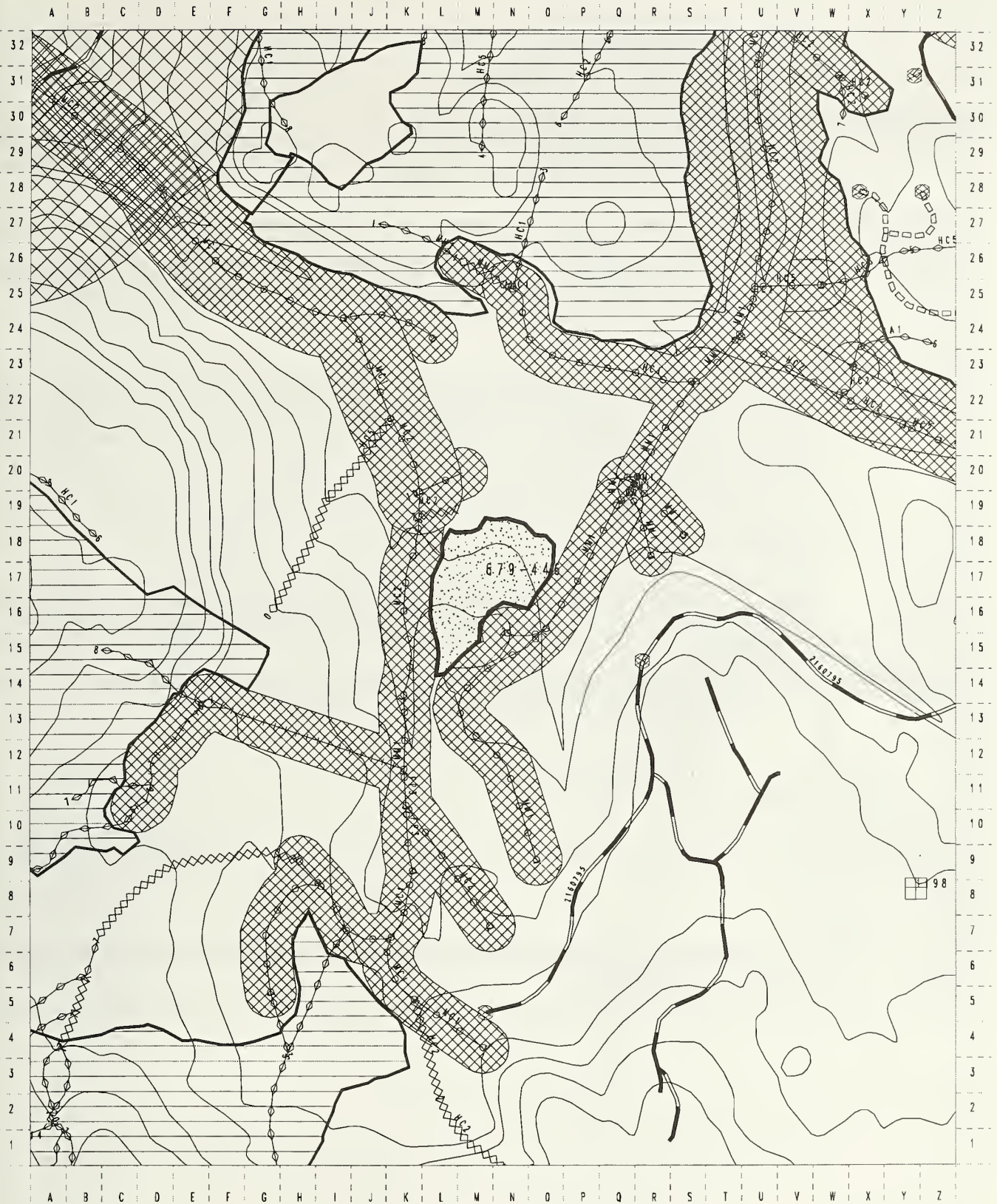
PHOTO YR/#: '91-390-145      1/4 QUAD: CRG A-1      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-061, high windthrow risk, flat ground. Productivity of site is high. Option: unevenaged group selections.
	ROADS:
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 550 C (St. Nicholas - Kaikli 5-35%), and 442 D (Ulloa - Sarkar 35 - 60%). Partial suspension for forested wetlands and karst (BMPs 12.5, 13.9). Deleted low volume in NE. Potential additions in SW and SE corners. Protection of streams per fisheries (BMPs 12.6a, 13.16). Changed to helicopter yarding. Unit lies in watershed H61A.
K.McCartney H.Roerick K.Buckley 7/21/95 J.Bauers 8/97	FISHERIES: Streams 1, 2, 3, 4, 5, 6, and 10 are class 1 blue/white streams that all require 100' TTRA buffers (BMP 12.6). Beaver ponds near the unit require 100' buffers (BMP 12.6).
D.Parker, M.Pacheco 8/11/95 C.Tighe, B.Johnston, A.Mueller 5/18/96	WILDLIFE:  Deer and bear sign common. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/18/96 Active beaver ponds found on stream near unit.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Due to stream complications/buffers, the resulting unit is a small type C clearcut with major buffers. Due to ATC study units in close proximity, 446 can be helicopter yarded with landing on the existing road to the east.



# Chosina Study Area Interim Layout N01 Unit 679-446 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |

# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-447      ACRES: 79      VOL: 3002      MBF      ALTERNATIVES: 2,3,4,5,6

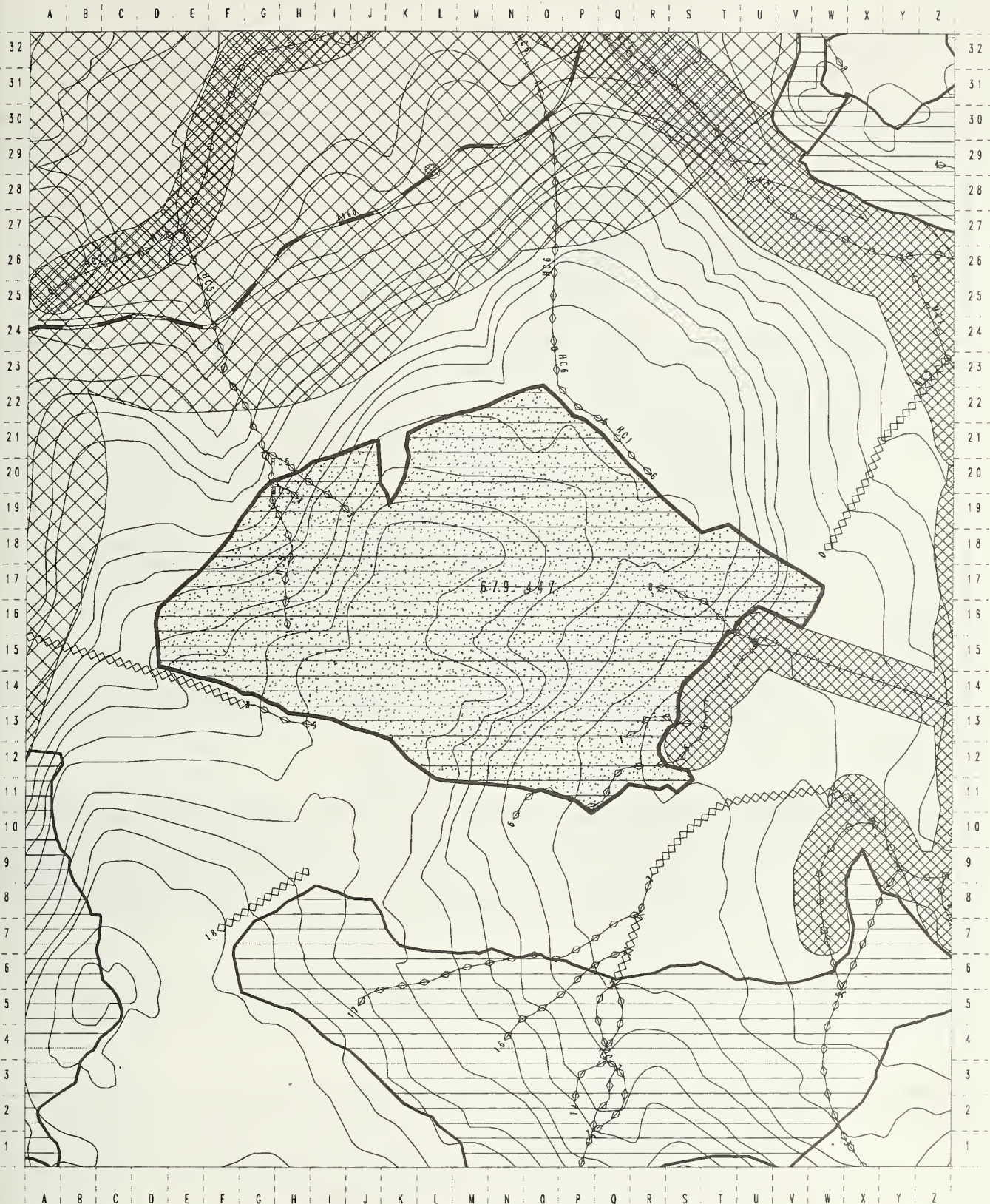
PHOTO YR/#: '91-390-145      1/4 QUAD: CRG A-1      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-035, 67902-062, mod. windthrow risk. Retain stand structure for wildlife where feasible. Possibly karst to S.E.. Productivity of site is high. Field checking alternative regeneration methods. Maintain setting width between units to the south. Steep. Option: helicopter G.S. / cc type C.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 11/07/95	SOILS/WATERSHED: Partial suspension for forested wetlands, MM13, rock outcrops, and possibly karst (BMPs 12.5, 13.9). May need to revisit during layout because of low volume and karst on south side of unit (BMP 13.2). Unit in watershed H61A. Additional information is filed in the reconnaissance folder.
G. Pierce 9/97	FISHERIES: Stream 1 is a class II blue/white at its mouth; where it enters the unit in the northwest, it was classified as a class III orange/white for 100' then changes to a class IV green/ white. Under the new TLMP (1997) standards the class III orange/ white section of stream 1 is a class IV orange/ white. This section of stream 1 was flagged orange/ white to provide additional resource protection. Stream 6 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6), inside the unit stream 6 has three tributaries, all are class IV green/ white streams. Orange/white streams require directional falling, and split yarding or full suspension, and immediate removal of introduced logging debris (BMP 13.16). Green/white systems require directional falling, and split yarding (where practical) or partial suspension. Streams must be cleaned of introduced logging debris before the end of the operating season or before the yarder leaves the area (BMP 13.16, 12.6a).
D.Parker, M.Pacheco 8/10/95 C.Tighe, T. Belfield 7/13/96	WILDLIFE:  Game trails, pellets, browse and beds. This unit is identified as an important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 7/13/96 Unit surveyed for TES plants, w/ T.Belfield, botanist. <u>Malaxis monophylla</u> , bog adder's-mouth orchid, was found in the vicinity of the unit. This plant is not on the Forest Service sensitive species list.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Part of ATC study (treatment 1). Clearcut harvest type C. 0% BA retained. No other commercial entries this rotation. Monitor for PCT in 20 years.



# Chosina Study Area Interim Layout NOI Unit 679-447 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |                       |                            |                                      |                    |
|-----------------------|----------------------------|--------------------------------------|--------------------|
| Class 1 Stream        | Saltwater                  | No Cut Stream Buffers                | Proposed Landings  |
| Class 2 Stream        | Fresh Water Lake           | Variable Width No Cut Stream Buffers | Existing Temp Road |
| Class 3 Stream        | 1000' No Cut Beach Buffers | Variable Width No Cut Karst Buffers  | Proposed Temp Road |
| Class 4 Stream        | No Cut Lake Buffers        | Alternative To Clearcutting Units    |                    |
| Existing Roads        | Partial Cut Lake Buffers   |                                      |                    |
| Proposed Roads        |                            |                                      |                    |
| Unit Boundary         |                            |                                      |                    |
| Susp/Yarding Boundary |                            |                                      |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

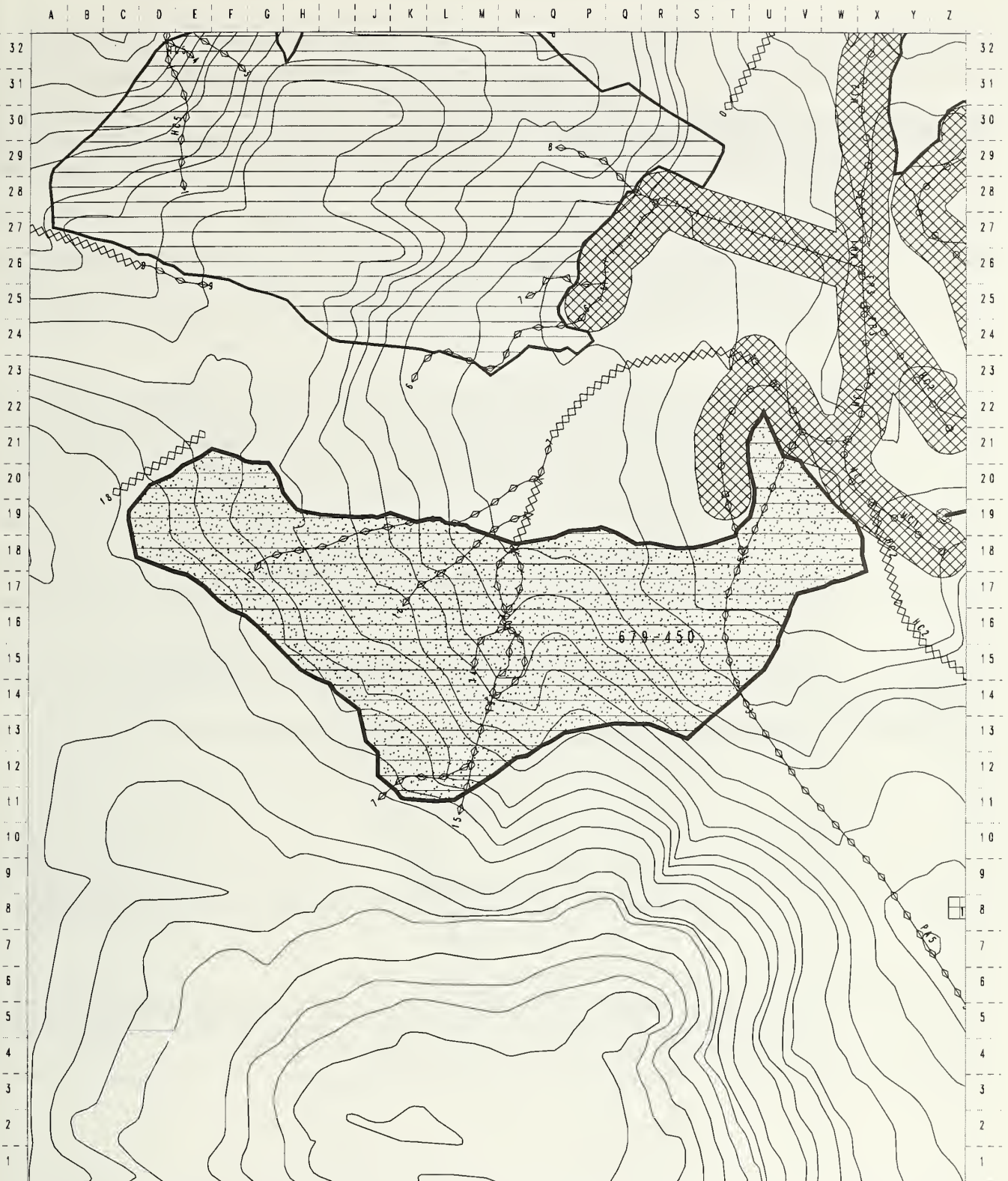
VCU-UNIT#: 679-450      ACRES: 64      VOL: 2161      MBF      ALTERNATIVES: 2,3,4,5,6

PHOTO YR#: '91-390-144      1/4 QUAD: CRG A-1 NE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-53, low windthrow risk. Productivity of site is high. Unit design calls for clear-cut regeneration method. Verify roads and/or landing locations. Option: helicopter group selections if road too expensive.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 57E (Petrel 60-75%), 40E (Sarkar - McGilvery 60-75%), 57D (Petrel 35-60%), 442D(Ulloa-Sarkar 35-60%), 4C (Helm 5-35%), and 1D (Vixen 35-60%). Partial suspension for MMI3, forested wetland, McGilvery, and karst (BMPs 12.5, 13.9; TLMP 1997). Stream protection per fisheries (BMP 13.16). Unit in third order watershed H61A. Unit will be harvested in ATC study.
G. Pierce 8/97	FISHERIES: Stream 1 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 2 is a class I blue/white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Inside the unit stream 3 is a class III orange/ white, the stream has a side channel that flows to stream 2 that is also class III orange/ white. The stream 3 class III orange/ white sections are now classified as class IV orange/ white under the new TLMP (1997) standards. Stream 3 is flagged orange/ white to provide additional resource protection. Stream 5 was a class III orange/ white, under the new TLMP (1997) standards stream 5 is a class IV orange/ white. Stream 5 is flagged orange/ white to provided additional resource protection. Stream 7 was a class III orange/ white, under the new TLMP (1997) standards stream 7 is a class IV orange/ white. Stream 7 is flagged orange/ white to provide additional resource protection. Stream 7A and 7B are class IV green/ white. Stream 10 is a class III orange/ white that is outside the unit. Stream 14 is a class IV green/ white. Stream 15 is a class IV green/ white. Stream 16 is a class IV green/ white. Stream 17 is a class IV green/ white. Stream 18 is a class III orange/ white that originates in Karst. The eastern slope break of stream 18 is the western unit boundary. Orange/white streams requires directional falling, and split yarding or full suspension, and immediate removal of introduced logging debris (BMP 13.16, 12.6a). Green/white streams requires directional felling and split yarding (where practical), or partial suspension. Must be cleaned of introduced logging debris before the end of the operating season or before the yarder leaves the area (BMP 13.16, 12.6a).
D.Parker, M.Dillman, C.Tighe 7/26/95 D.Parker, B.Johnston 8/17/95 C.Tighe, B.Johnston, A. Mueller 5/22/96 T.Belfield 7/96	WILDLIFE:  Deer browse, tracks and pellets throughout unit. Bear signs and wolf tracks . Dead bear found between this unit and unit 679-451. Karst canyons and faults in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/22/96 Large bear in helispot. This unit was surveyed for sensitive plants by the botanist. <u>Malaxis monophylla</u> , bog adder's-mouth orchid, was found in the vicinity. No plants off the Forest Service sensitive species list were found.
J.Baichtal 5/15/96 10/22/96  T.Fifield 10/28/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. Karst is only a minor component of the unit and of low vulnerability. There are no resource concerns for this unit. Unit layout and resource specialists found a single sinkhole in the northeast quarter of the unit, near the unit boundary. The Standards and Guidelines for Karst and Cave Resources outlined in TLMP require a minimum 100 foot buffer surrounding this feature. However, it is felt that this isolated feature can be protected by a smaller buffer, directional falling away from the feature and no yarding adjacent to or across the feature. The unit is part of the ATC, uneven-aged management study and 75% BA is retained. A better solution would be for a retention patch to be moved to encompass this feature.  LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Large deep V-Notch SE corner-original unit. Dropped 7 acres for scrub at east and south ends. A sinkhole exists within the unit boundary in the northeastern quarter. A no harvest buffer has been flagged around this sink. Timber is to be directionally felled away from the feature. No yarding will be adjacent to or across this sinkhole. Management emphasizes protection of the feature and water quality maintenance. A retention patch should be moved to encompass this feature. Part of ATC study, uneven-aged management, 75% BA retained. Designated clumps will not be harvested. Individual trees will be marked for cut between the retention clump areas. See prescription for ATC for details (treatment 7). No further commercial treatment this rotation. Monitor for potential PCT at 15 years.

# Chosina Study Area Interim Layout NOI Unit 679-450 Alt 3

Mapscale 1:7920 (8 inch to Mile)





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-467      ACRES: 54      VOL: 2052      MBF      ALTERNATIVES: 2, 3, 4, 5, 6

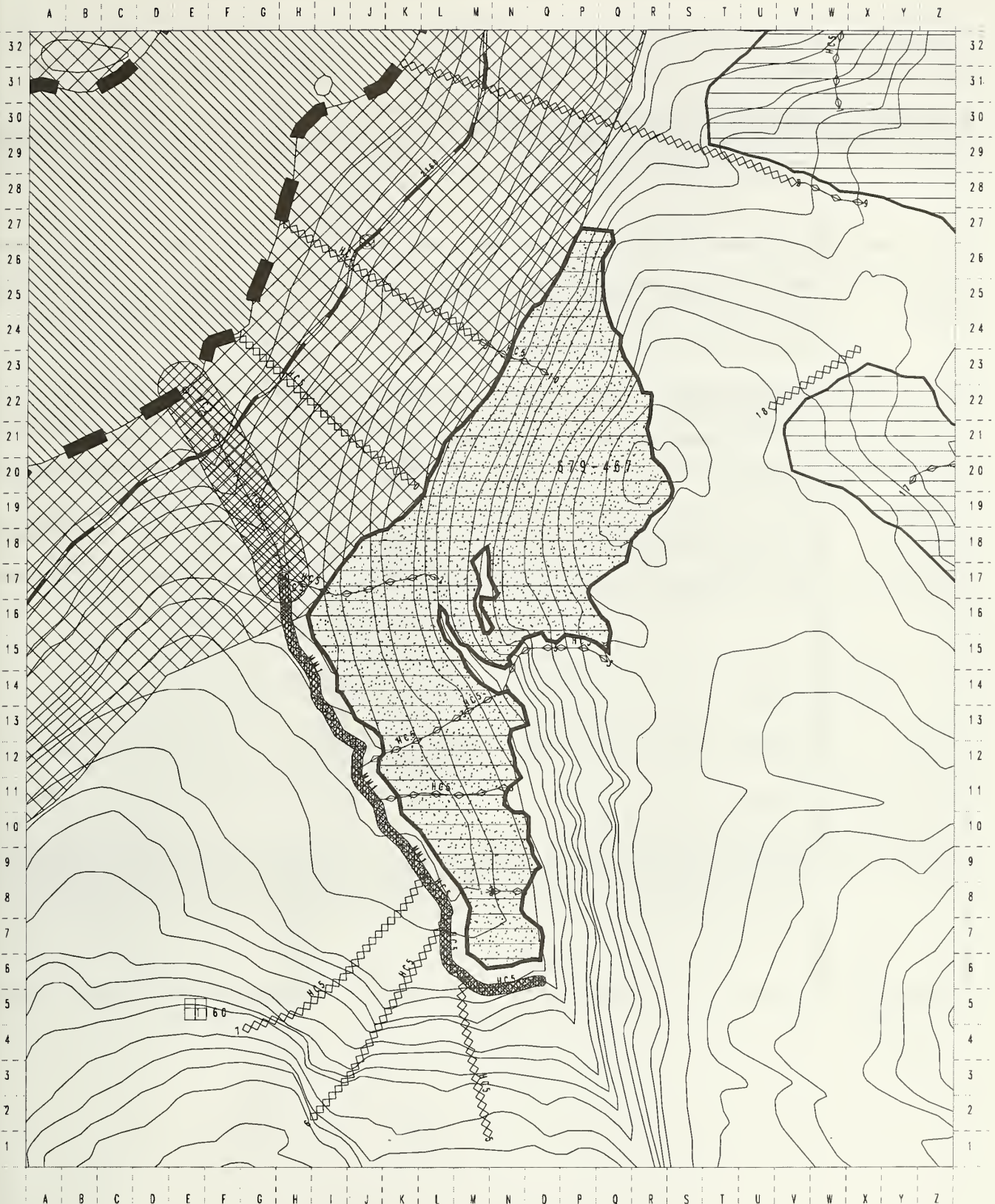
PHOTO YR/#: '91-390-145 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-030, low windthrow risk, portion downhill yarded. Retain stand structure for wildlife where feasible. Productivity of site is high. A maze of streams at South end. Helicopter overstory removal or group selections may be an option.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 8/23/95 EIS R.Johnson	SOILS/WATERSHED: A minimum of partial suspension is required (BMP 13.9). Minimum of a 100' buffer on fisheries stream #1 (BMPs 12.6, 12.6a). Green and white protection as prescribed by fisheries for streams #10, #2, and #3 (BMP 13.16). Minor amounts of Kaikli and Kitkun soils present (TLMP 1997). Additional information is filed in the reconnaissance folder. Lands previously separated into 679-506 for helicopter yarding have been added back into this unit. This unit is in third order watershed H60A.
M. Driscoll 8/97	FISHERIES: Stream 1 is a class III orange/ white that has a slope break buffer, and is the south west boundary of the unit. Stream 2 is a class IV green/ white. Stream 3 is a class III orange/ white near the east boundary that changes to class IV green/ white inside the unit. The class III orange/ white section of stream 3 is now a class IV orange/ white under the new TLMP (1997) standards. This section of stream 3 is flagged orange/ white to provide additional resource protection. Stream 5 was a class III orange/ white, under the new TLMP (1997) standards stream 5 is a class IV orange/ white. Stream 5 is flagged orange/ white to provide additional resource protection. Stream 6 was a class III orange/ white, under the new TLMP (1997) standards stream 6 is a class IV orange/ white. Stream 6 is flagged orange/ white to provide additional resource protection. Stream 10 is a class IV green/ white. The orange/ white streams require directional falling, and split yarding, or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, M.Pacheco 6/21/95 M.Dillman 10/96	WILDLIFE:  Deer sign in unit. This unit identified as an important travel corridor. Partial harvest is recommended to maintain forest structure and lessen impact on wildlife migration and dispersal. Recommend leaving live trees and snags where possible to maintain habitat structure and snag density. This unit exceeds the steepness recommended by the current goshawk protocol so was not surveyed during 1996.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97 D.J.L., R.J. 10/95	PRESCRIPTION: Drop South 1/4 for streams. Drop west of streams - hard to read. Part of ATC study, even-aged management, clearcut with 5% BA retained for wildlife structure. Clump retained trees where possible. See ATC prescription for details (treatment 2). No further commercial treatment this rotation. Monitor for PCT at 15 years.



# Chasina Study Area Interim Layout NOI Unit 679-467 Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-470 ACRES: 15 VOL: 300 MBF ALTERNATIVES: 2, 3, 6

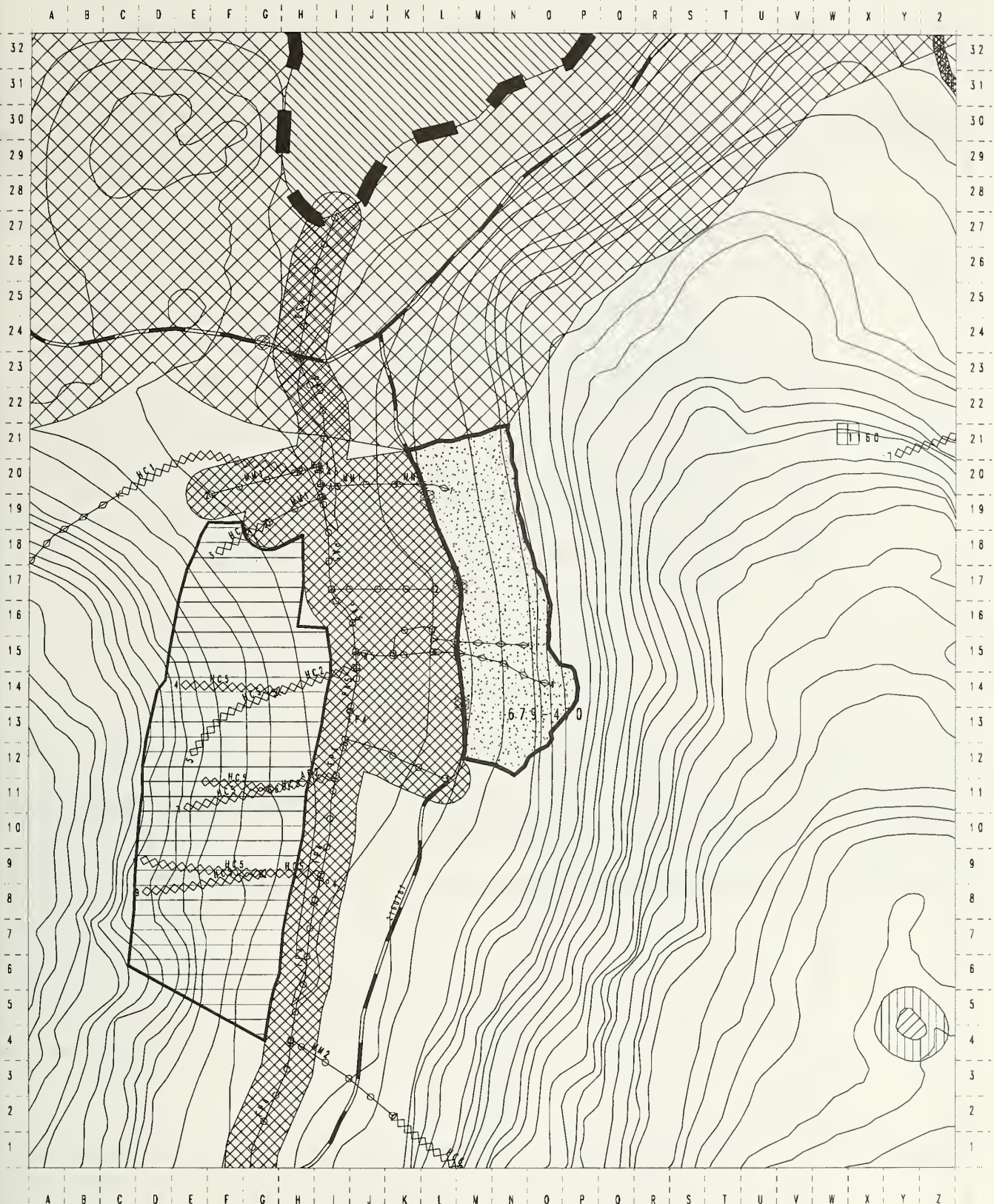
PHOTO YR/#: '91-490-137 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: SL/RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67901-160, high windthrow risk, large portion downhill yarded. Unit changed to provide proportionality of volume classes. Retain stand structure for wildlife where feasible. Productivity of site is moderate. Suspension requirements (see soils or fish). Dropped off eastern 1/2 above 300' elevation due to cliffs and low volume timber in the recon process.
	ROADS:
R.Johnson 8/03/95	SOILS/WATERSHED: Upper boundary from 370' elevation on the south end to 200' on the north end of unit (BMP 13.5; TLMP 1997). Elevations were measured in the field and may not correspond to those shown on the unit map. Partial suspension for MMI3, forested wetlands, McGilvery, and nonstreams (BMPs 12.5, 13.9; TLMP 1997). Additional information is filed in the reconnaissance folder. Unit is in second order watershed H59A.
G.Pierce J.Hannon 8/97	FISHERIES: Stream 1 is a class IV green/ white. The 3 is a class IV green/ white. Stream 4 is a class IV green/ white. The green/ white streams require directional falling, split yarding (where practical), or partial suspension. Remove introduced debris from the stream channel before the end of the operating season or before the yarder leaves the area (BMP 13.16).
C.Tighe, J.Wrate 6/16/95 B.Johnston, A. Mueller 6/7/96	WILDLIFE:  This unit is identified as an important wildlife travel corridor. Partial harvest is recommended to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Maintain 1000 foot estuary buffer.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 5% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Take unit body to stream buffer (100') to the west. Partial suspension required. 1000' buffer may impact north 1/4 of unit. Very large buffer to the west of road. Existing salvage sale below the road. The 5% retained volume can be achieved through the large and variable buffer to the west of the road.



# Chosina Study Area Interim Layout NOI Unit 679-470 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

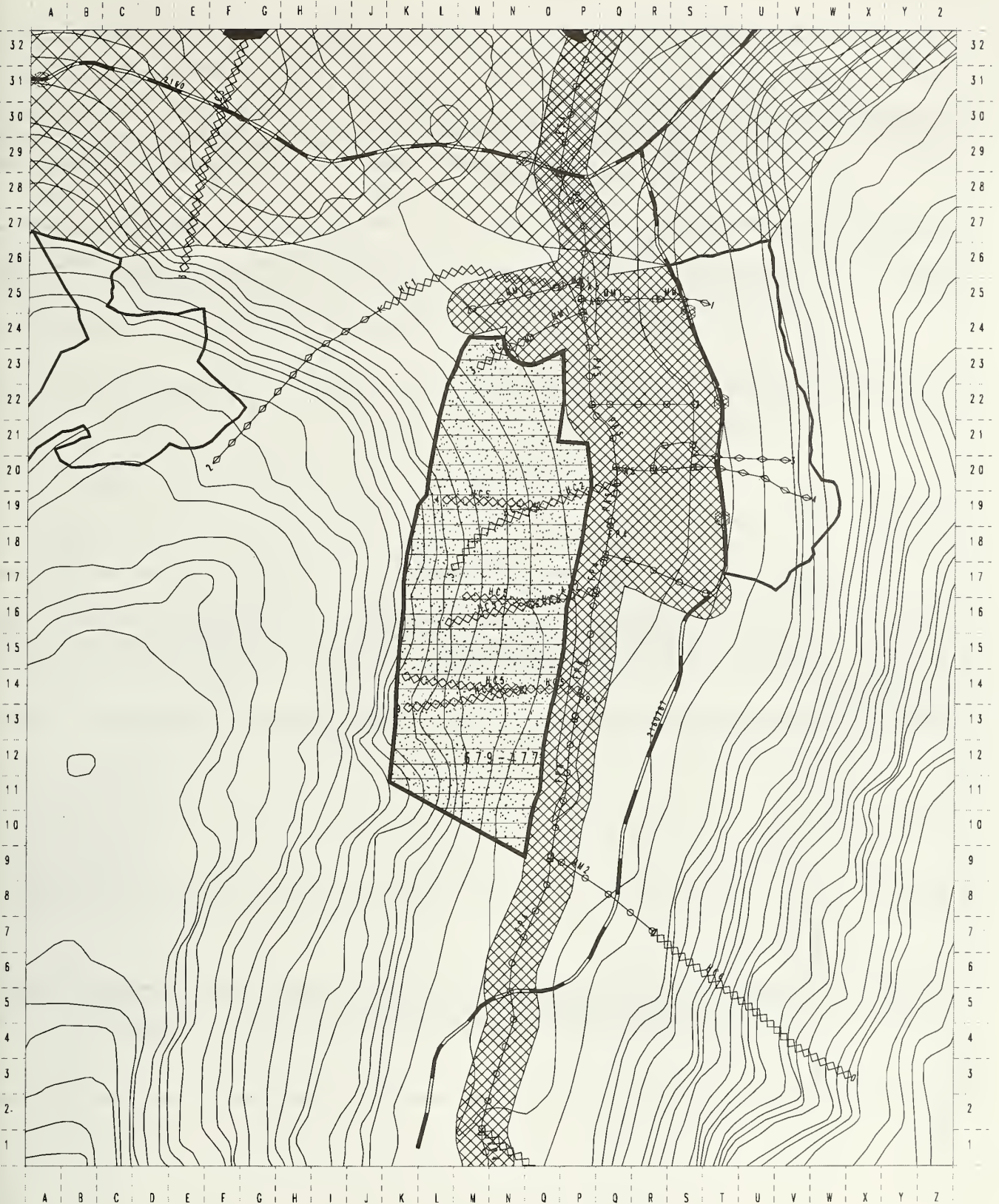
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PHOTO YR/#: '91-490-137 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67901-160, high windthrow risk, portion downhill yarded. Productivity of site is high. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (unit 508). Suspension requirements (see soils or fish). Buffers (see fisheries). Unit may be greatly reduced. Avoid soils problems. Option: helicopter.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 8/02/95	SOILS/WATERSHED: Lower boundary at 150 to 100' elevation. Upper boundary about 400' elevation. Elevations were measured in the field and may not correspond to those shown on the unit map. Partial suspension for MMI3 and McGilvery (BMP 13.9; TLMP 1997). Orange and white protection for stream on south boundary, and green and white protection for stream on north boundary (BMP 13.16). Additional information is filed in the reconnaissance folder. Unit now includes some lands previously separated into 679-508 for helicopter yarding and then deleted. Unit is in second order watershed H59A. This includes no harvest in this unit because it is the control unit for the ATC study.
K. Buckley, K. Kitchel, M. Solomon, K. McCartney, S. Deck, 6/6/96	FISHERIES: The stream along the east boundary, the main stream (ADF&G # 102-40-10150), is a class I blue/ white that requires a 120' TTRA buffer (BMP 13.16). Stream 1 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 1 changes to a class III orange/ white 120' up from the main stream. Stream 2 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class I blue/ white the requires a 120' TTRA buffer (BMP 12.6). Stream 3 changes to a class III orange/ white 120' above the main stream. Stream 4 is a class III orange/ white. Stream 5 is a class III orange/ white. Stream 6 is a class III orange/ white. Stream 7 is a class III orange/ white. Stream 8 is a class III orange/ white. Stream 9 is a class III orange/ white. The class III orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). <u>O&amp;W streams</u> require DF, full over or SY and cleaning of introduced debris immediately. <u>G&amp;W streams</u> requires DF, and SY (where practical) or partial over, and cleaning the stream of introduced debris before the end of the operating period or before the yarder leaves the area. <b>This unit is the control unit for the alternatives to clear cutting study, no harvest will occur.</b>
D.Parker, M. Pacheco 6/16/95 C.Tighe, B.Johnston, A. Mueller 6/27/96	WILDLIFE:  Game trails and alder seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit identified as an important wildlife travel corridor. Recommend partial harvest to maintain forest structure and lessen the impact on wildlife migration and dispersal.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: This unit was surveyed in 1996. No cultural resources were noted. There are no concerns with the unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Pre-ATC prescription: <u>Clear-cut w/ reserves</u> ; retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Move boundry to the south adjacent to existing cut. Partial suspension required. Protect steep slopes. Option small group selects - 25- 30% of area. Yard to the north, build landing within the beach buffer. Part of ATC study (treatment 5): no cut control in all alternatives.

# Chosina Study Area Interim Layout N01 Unit 679-477 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-479      ACRES: 18      VOL: 684      MBF      ALTERNATIVES: 3,4,5,6

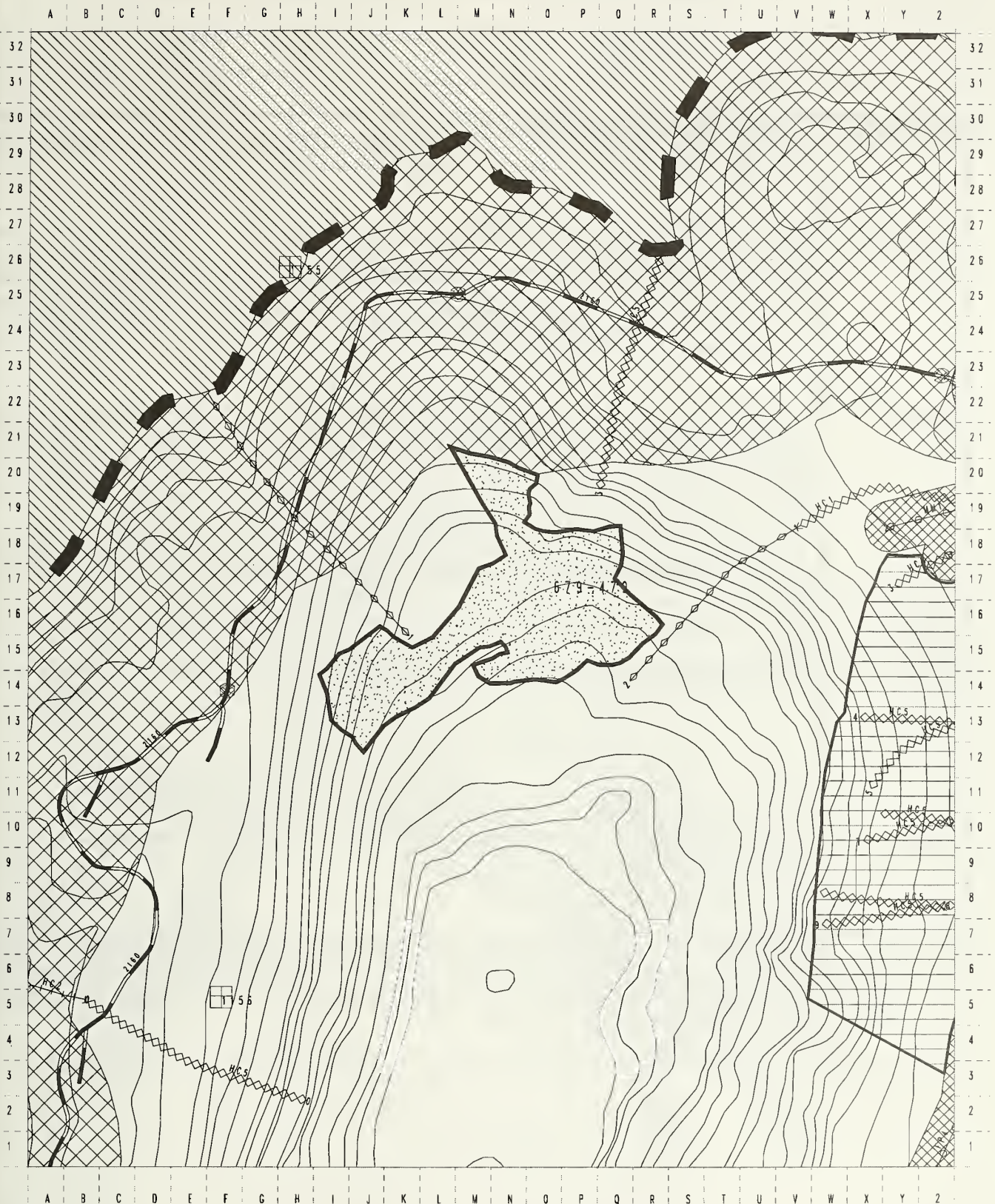
PHOTO YR/#: '91-490-137      1/4 QUAD: CRG A-1      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67901-151 and 152, high windthrow risk, high mistletoe present. Retain stand structure for wildlife where feasible. Productivity of site is high. Dropped out major cliff on NE area and estuary buffer. Leave 3 cedar seed trees / acre, clear-cut w/ reserves. Maintain setting width between units.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 3D (Vixen - Traitors 35-60%) , 4D (Helm 35-60%), and 6 (McGilvery- Traitors 60-100%). Helicopter yarding is prescribed and meets requirements for partial suspension on forested wetlands, MMI3 and McGilvery (BMPs 12.5, 13.9; TLMP 1997). Steep and rock face N boundary deleted by silviculture. Protection of class III or IV streams per fisheries (BMP 13.16). Karst reported by fisheries and wildlife, and may need field review during layout (BMP 13.2).
G.Pierce 8/97	FISHERIES: No streams were found in this unit.
D.Parker, B.Johnston, M. Pacheco 8/3/95 B.Johnston, A. Mueller 6/7/96	WILDLIFE:  Game trails and bear scat throughout. Loon was heard from northwest area of unit (Kitkun Bay). Karst fault seen in unit. Unit is in an important wildlife travel corridor. Recommend partial harvest to maintain forest structure and lessen the impact on wildlife migration and dispersal. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/7/96 Deer sign in unit.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut - leave 5% structure. Leave 3 cedar seed trees/acre for seeding/structure purpose. Keep unit small in size to minimize impact to deer corridor.



# Chosina Study Area Interim Layout NOI Unit 679-479 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 679-497      ACRES: 21      VOL: 694      MBF      ALTERNATIVES: 3, 4, 5, 6

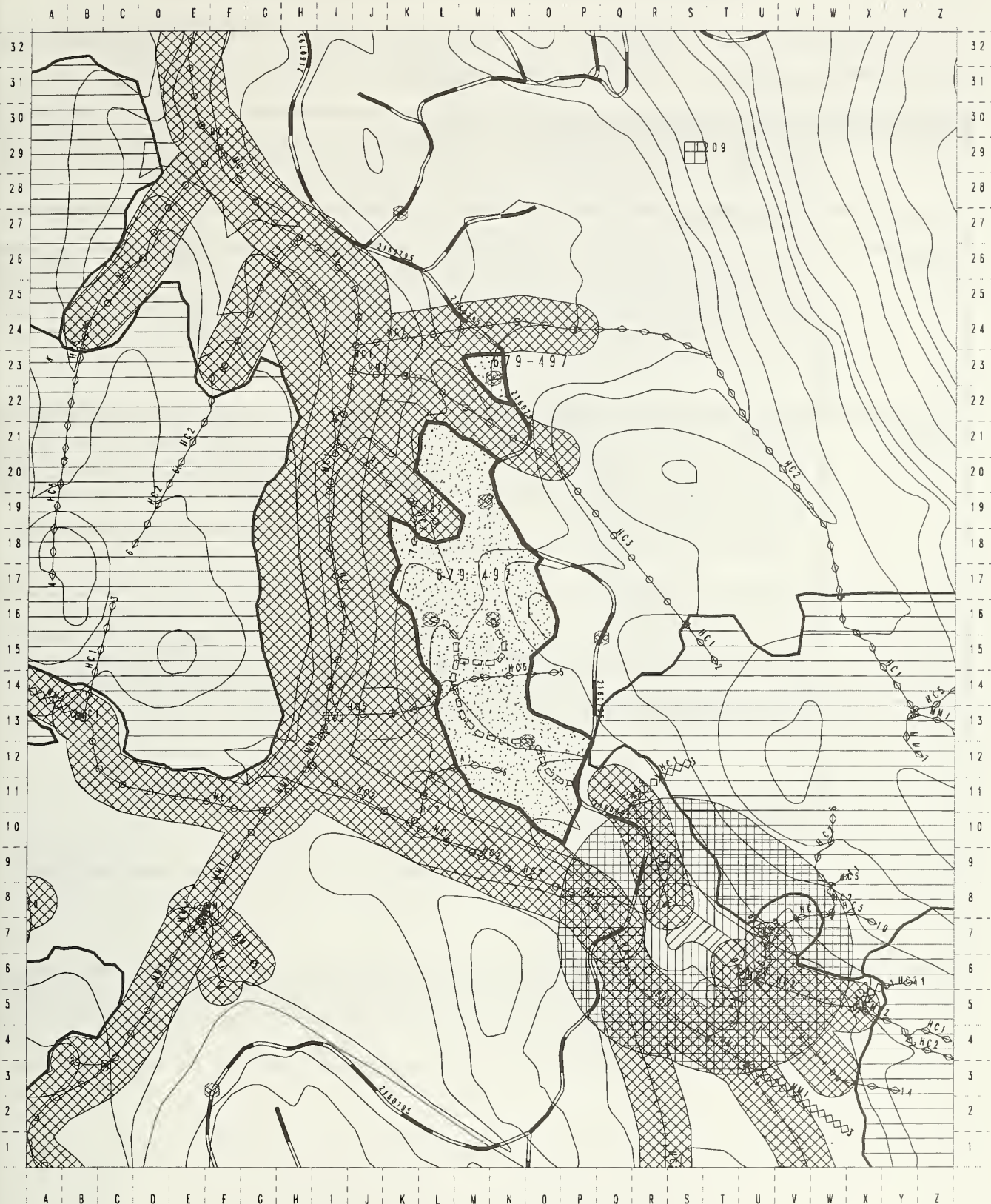
PHOTO YR/#: '91-390-145      1/4 QUAD: CRG A-1      LOGGING SYSTEMS: RS/SH

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 67902-82 and -035, moderate windthrow risk. Productivity of site is high. Maintain setting width between units. Spur roads will need extending, shovel flat ground. Partial cut buffer.
J. Oien 5/96	ROADS: Existing culverts are not be passable to fish and may need work (BMP 14.14).
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 1C (Vixen 5-35%) and 550C (StNicholas - Kaikli 5-35%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Shovel log per protection guidlines in BMP 13.9 for slope, topography, support shovel, crossing streams, felling, spur roads, and turns. Minor amounts of Kaikli soil present (TLMP 1997). Unit lies in third order watershed H62A, which will have about 42% cumulative effect under alternative 3(BMP 12.1; TLMP 1997). Unit is the same size, changed slightly by presale following EIS review.
M.Driscoll 8/97	FISHERIES: Stream 1 is a class I blue/ white that requires a 150' TTRA buffer (BMP 12.6). Stream 2 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a Class I Blue/ white that requires a 120' buffer (BMP 12.6). Stream 4 is a class I blue/ white that requires 120' TTRA buffers on all channels (BMP 12.6). Stream 5 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 5 turns into a class III orange/ white 200' into the unit, and class IV green/white in its upper sections. The class III orange/ white section of stream 5 is now classified as a class IV orange/ white under the new TLMP (1997) standards. This section of stream 5 is flagged orange/ white to provide additional resource protection. The orange/ white stream requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, M. Pacheco 6/21/95 M.Dillman 7/11/96	WILDLIFE: Deer and bear sign seen in unit. Fawn hoof found--wolf kill. 7/11/96 Deer and bear sign-pellets, trails, scat, tracks, and dug-up skunk cabbage seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 5% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. <u>Partial suspension required</u> and full suspension w/ shovel yarding. Dropped 3 acres in SW corner buffer between creeks. Shovel yard where possible set boundry lines with windthrow potential in mind. Topography will dictate width of stream buffers. Feather boundary around small northern section to reduce risk of windthrow.



# Chosina Study Area Interim Layout NOI Unit 679-497 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |                       |                            |                                      |                    |
|-----------------------|----------------------------|--------------------------------------|--------------------|
| Class 1 Stream        | Saltwater                  | No Cut Stream Buffers                | Proposed Landings  |
| Class 2 Stream        | Fresh Water Lake           | Variable Width No Cut Stream Buffers | Existing Temp Road |
| Class 3 Stream        | 1000' No Cut Beach Buffers | Variable Width No Cut Korst Buffers  | Proposed Temp Road |
| Class 4 Stream        | No Cut Lake Buffers        | Alternative To Clearcutting Units    |                    |
| Existing Roads        | Partial Cut Lake Buffers   |                                      |                    |
| Proposed Roads        |                            |                                      |                    |
| Unit Boundary         |                            |                                      |                    |
| Susp/Yarding Boundary |                            |                                      |                    |





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

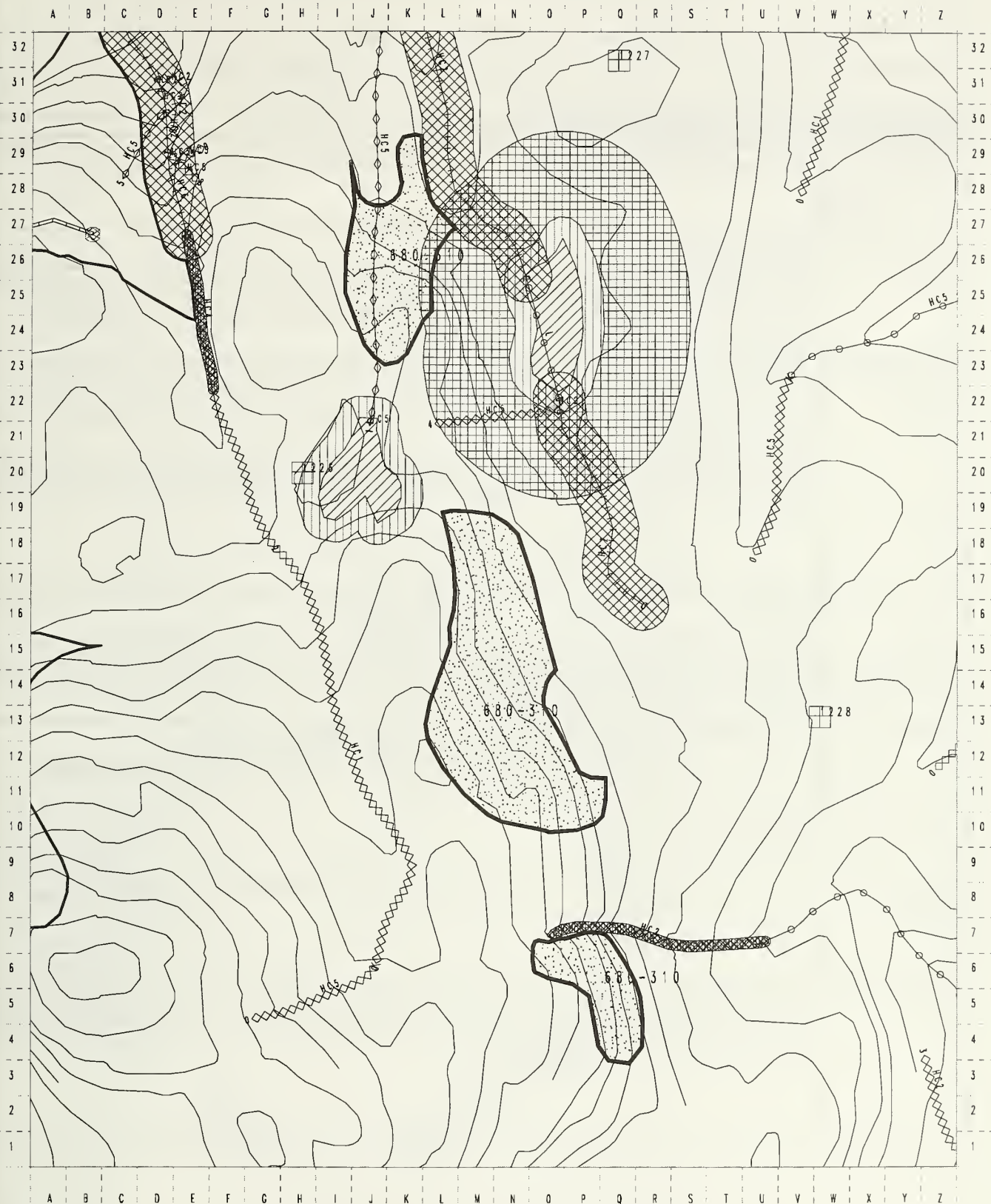
VCU-UNIT#: 680-310      ACRES: 27      VOL: 342      MBF      ALTERNATIVES: 3, 5, 6

PHOTO YR/#: '91-390-225 1/4 QUAD: KTN B-6 SE 1/4 LOGGING SYSTEMS: HE

[illegible]

# Chasina Study Area Interim Layout NOI Unit 680-310 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |                       |                            |                                      |                    |
|-----------------------|----------------------------|--------------------------------------|--------------------|
| Class 1 Stream        | Saltwater                  | No Cut Stream Buffers                | Proposed Landings  |
| Class 2 Stream        | Fresh Water Lake           | Variable Width No Cut Stream Buffers | Existing Temp Road |
| Class 3 Stream        | 1000' No Cut Beach Buffers | Variable Width No Cut Karst Buffers  | Proposed Temp Road |
| Class 4 Stream        | No Cut Lake Buffers        | Alternative To Clearcutting Units    |                    |
| Existing Roads        | Partial Cut Lake Buffers   |                                      |                    |
| Proposed Roads        |                            |                                      |                    |
| Unit Boundary         |                            |                                      |                    |
| Susp/Yarding Boundary |                            |                                      |                    |



## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 680-317 ACRES: 28 VOL: 500 MBF ALTERNATIVES: 3, 5, 6

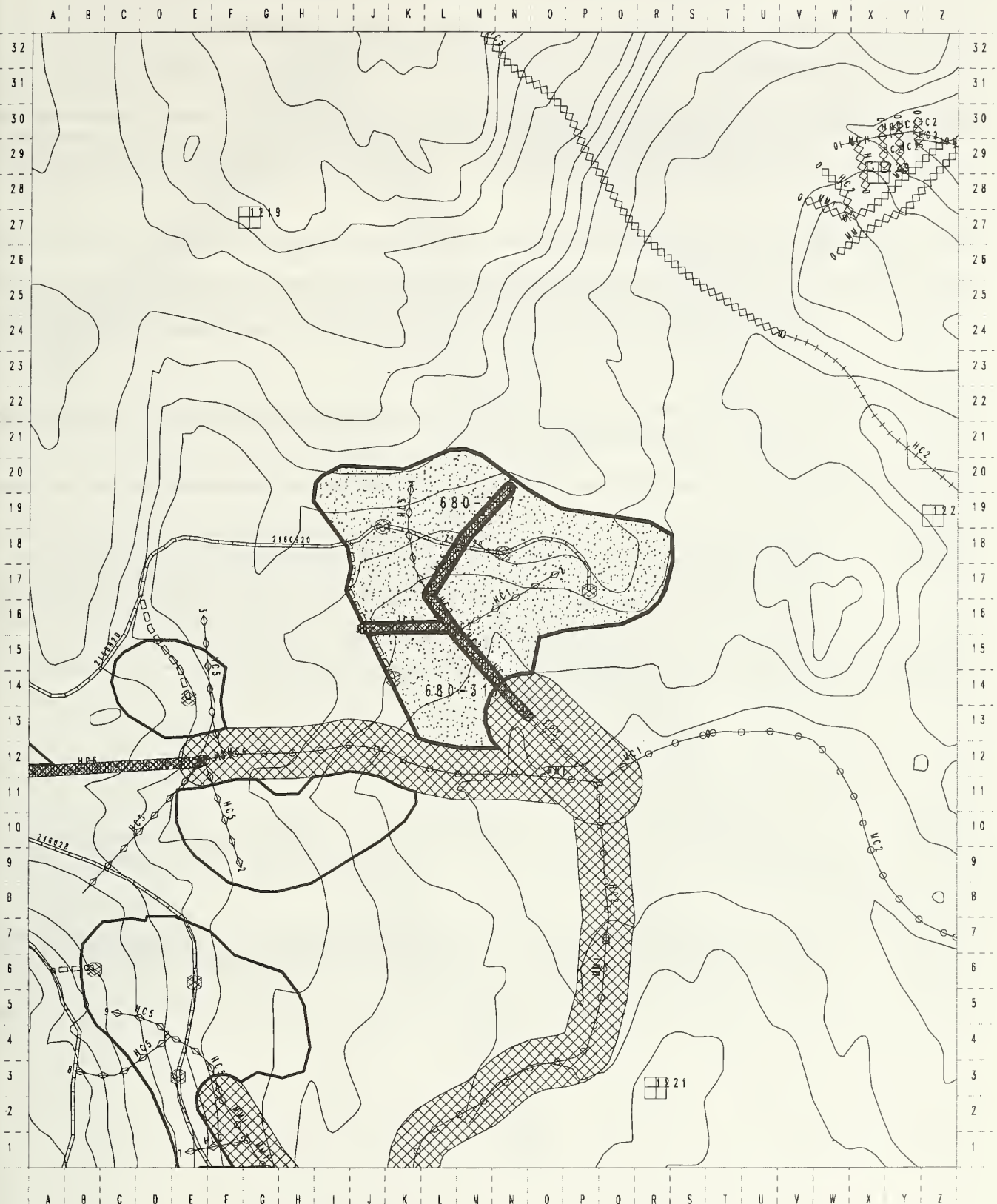
PHOTO YR/#: '91-390-224 1/4 QUAD: CRG A-1 NE 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68002- low windthrow risk. Productivity of site is moderate. Dropped uneconomic, low volume area surrounding, to the south and east of creek. Maintain setting width between units. Shovel yard 1/3 of unit.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped as 31C (Wadleigh 5-35%), 550C (StNicholas - Kaikli 5-35%) , and 86CD(Kaikli-Grindell 5-60%). Partial suspension for forested wetlands (BMPs 12.5, 13.9). Silviculture deleted S end for low volume (BMP 12.5). Stream protection per fisheries(BMP 13.16). Third order watershed E92A. Maintain standards for slope, topography, walk on waste wood, crossing drainages, spur roads, and turns for shovel yarding per BMP 13.9 . Minor amounts of Kaikli soils present (TLMP 1997).
K.McCartney, K.Kitchel, S.Deck 6/18/96	FISHERIES: Stream 1 is a class II blue/white TTRA that requires a 200' buffer (BMP 12.6). The upper reach of this stream becomes a class III orange/white stream that is 9 feet wide, has 29 feet of incision, and 9% gradient. This section of stream 1 will require a slope break buffer. Stream 2 is a class IV green/white stream. Stream 3 is a class III orange/white that flows directly into stream 1 that is 3 feet wide, has 21 feet of incision and 16% gradient. Stream 3 will require a slope break buffer. Stream 4 is a class IV green/white tributary to stream 1. The orange/white streams require directional falling, split yarding or full suspension, and the immediate removal of introduced debris (BMP 13.16) if buffers are not needed. The green/white streams require directional falling, split yarding (where practical) or partial suspension, and the removal of introduced debris before the yarder leaves the area or by the end of the operating season (BMP 13.16).
C.Tighe, B.Johnston, A. Mueller 6/14/96	WILDLIFE:  Deer sign (beds, pellets) seen. Game trails and bear scat seen in unit as well. One dead deer found in close proximity to unit. Fisheries crew reported seeing a mouse-like mammal along creek. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed during 1995 due to the fact that the habitat did not meet the volume class requirements in the current goshawk protocols.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut. Partial suspension required, and shovel yarding. May have to drop spur and narrow portion to the southwest. Uneconomical if unit complex to the south and west are dropped. Monitor for PCT at 25 years.



# Chasina Study Area Interim Layout NO1 Unit 680-317 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



Created by Sally Werfeld on January 12, 1998

# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 680-330      ACRES: 28      VOL: 378      MBF      ALTERNATIVES: 2, 3, 5, 6

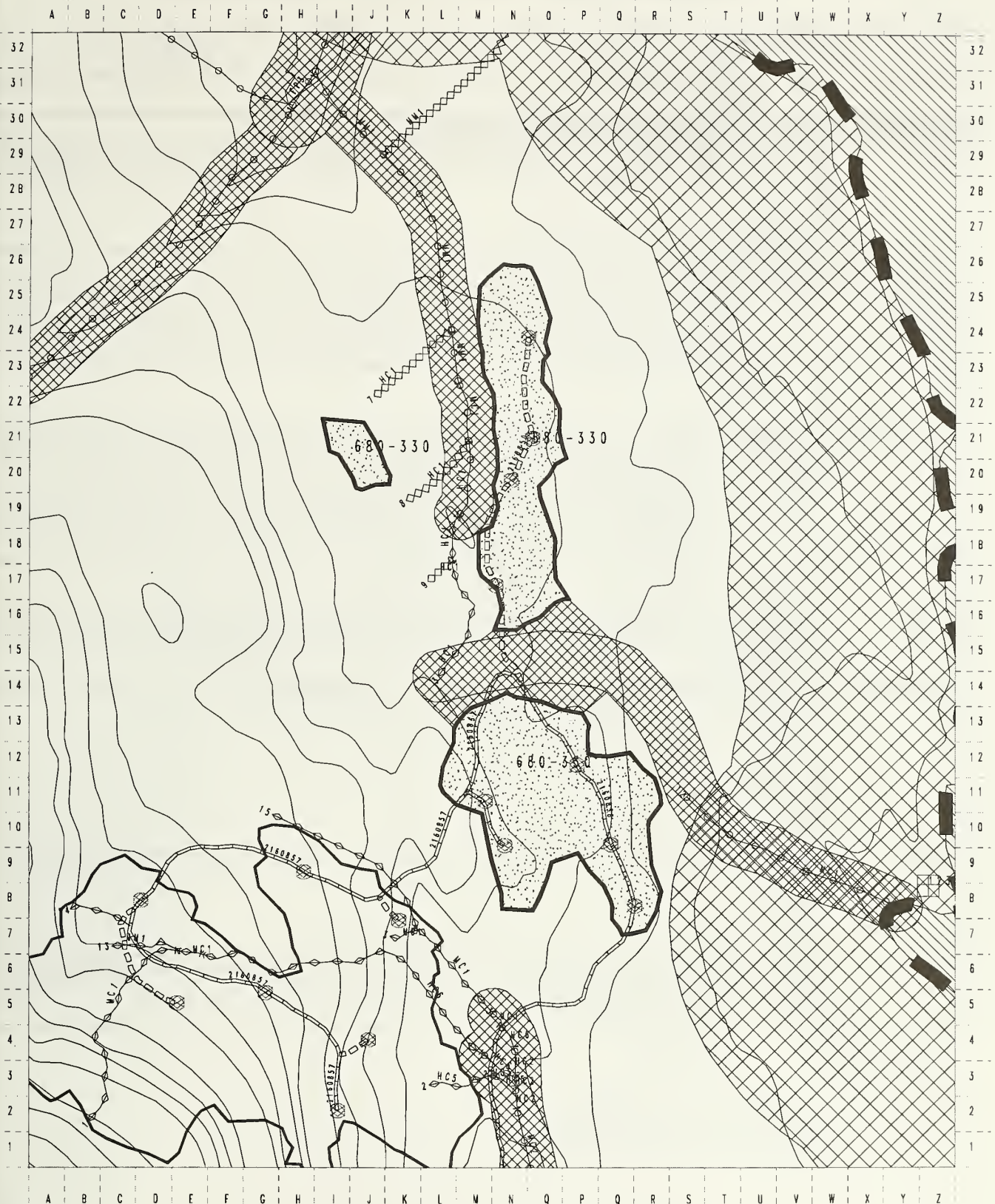
PHOTO YR/#: '72(53)-1872-33      1/4 QUAD: KTN A-6 NW 1/4      LOGGING SYSTEMS: RS/HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68002-016, low windthrow risk, mod. mistletoe present. Productivity of site is low. Adjacent to private harvesting. Maintain setting width between units surrounding. Anticipate planting 20 acres of Alaska yellow cedar to maintain composition. Very scrubby at north end.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Partial suspension for the forested wetlands (BMPs 12.5, 13.9). Minor amounts of Kaikli and Kitkun soils present (TLMP 1997). North end of this area is where stream #3 changes into a blue and white class I from a blue and white class II. This is near the survey marker. Stream #3 is the main north-south stream in the unit. Streams had been identified and tagged by fisheries. Unit partially lies in third order watershed E94A.
J.Bauers 8/97	FISHERIES: Stream 1 is a class I blue/ white that requires a 100' TTRA buffer (BMP 12.6). Stream 2 is a class I blue/ white that requires a 100' TTRA buffer (BMP 12.6).
C.Tighe, B.Johnston 7/10/96	WILDLIFE:  This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. To provide for adequate snag density and distribution within the VCU, recommend leaving a 0.1 acre or larger snag patch for each 10 acres of unit. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is an area of approximately 30 harvested trees, in NE corner of unit. This unit was not surveyed during 1995 due to the fact that the habitat did not meet the requirements called for in the current goshawk protocols. Maintain 1000 foot estuary buffer.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit(TTRA buffer provides the reserves) where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Major complications with stream buffers.



# Chasina Study Area Interim Layout NOI Unit 680-330 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

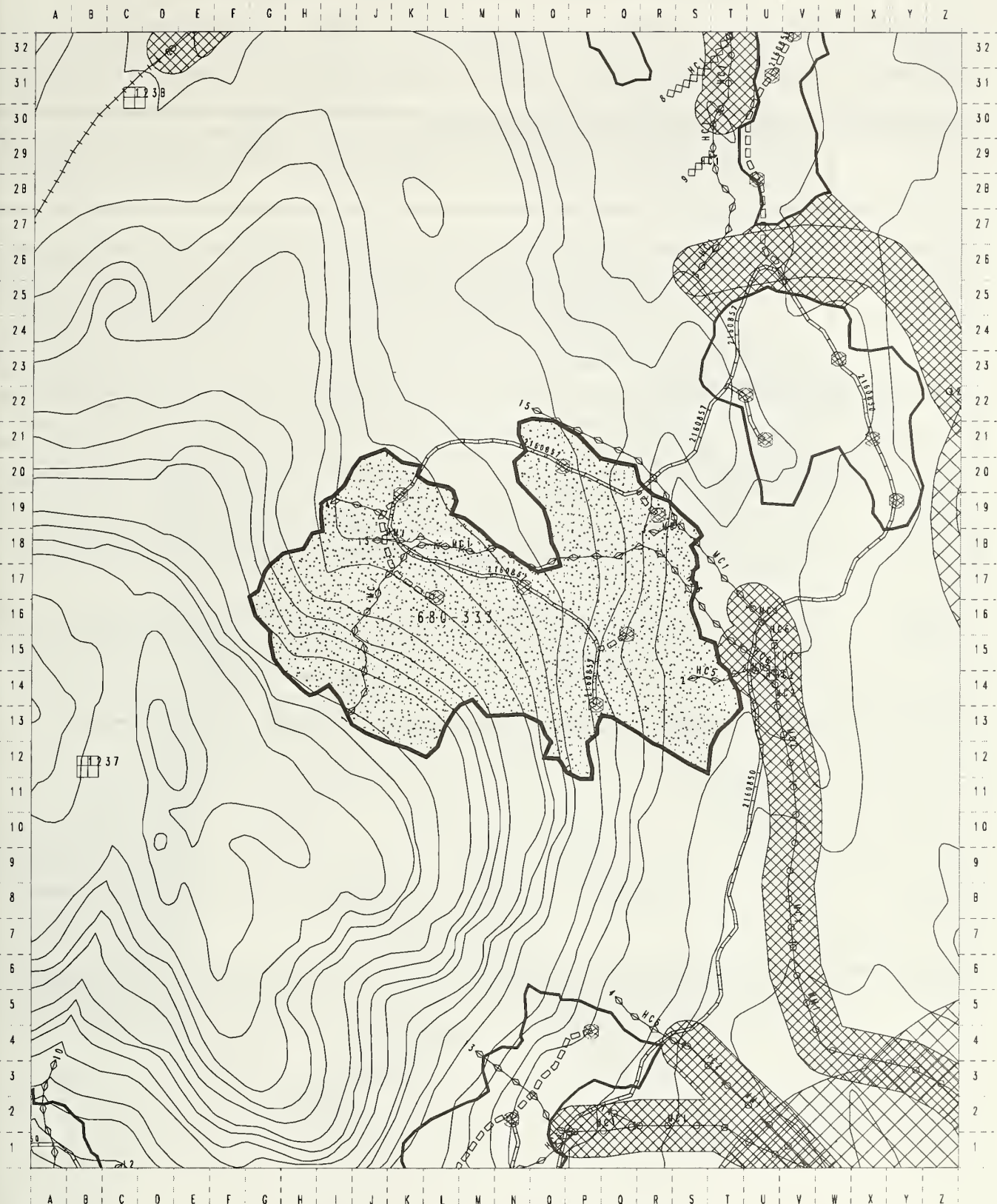
VCU-UNIT#: 680-333      ACRES: 52      VOL: 1170      MBF      ALTERNATIVES: 2, 3, 6

PHOTO YR/#: '72(53)-32-1872/'91-390-218, 219      1/4 QUAD: KTN A-6 NW 1/4      LOGGING SYSTEMS: SH/SL/RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68001-10. High windthrow risk, portion downhill yarded. Partial cut buffer. Productivity of site is moderate. Adjacent to native cuts. Uneconomic, low volume area northeast & southwest. Maintain setting width between units. Difficult terrain - potential blind leads in upper slope. Verify feasibility and modify unit bdry as required. Profiles needed.
J. Oien 5/96	ROADS: Evaluate road location to determine which side of creek is best for logging.
field D.J.Landwehr 8/9&15/95 EIS R.Johnson	SOILS/WATERSHED: Partial suspension for MM13 and forested wetland soils (BMPs 12.5, 13.9). Small area of MM14 soils deleted at head of several small streams in the southwest portion of the unit near the backline. A minimum of good partial suspension is required; area should be deleted if good suspension is not possible (BMPs 13.5, 13.9). Shovel yarding may be feasible on areas between creeks in north part of unit (BMP 13.9). Unit should be designed to prevent blowdown. Prescriptions for streams changed to agree with those of fisheries (BMP 13.6). Additional information is filed in the reconnaissance folder. Minor amounts of Kitkun soils present (TLMP 1997).
M.Driscoll 8/97	FISHERIES: Stream 1 is a class IV green/ white, that changes to a class IV orange/ white. This section of stream 1 is flagged orange/ white to provide additional resource protection. Stream 2 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 13 is a class IV green/ white. Stream 14 is a class IV green/ white. Stream 15 is a class IV green/ white. The orange/ white stream require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
C.Tighe, B.Johnston 7/12/96	WILDLIFE:  Unit contains some excellent goshawk habitat. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit was not surveyed during 1995. Apparently within the unit is an isolated patch of good habitat but overall the area did not meet the habitat requirements called for in the current goshawk protocols.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Dropped 25 acres due to scrub and steep slopes. Optional: Helicopter overstory removal, greater than 25"DBH- all species.

# Chasina Study Area Interim Layout NOI Unit 680-333 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 681-304 ACRES: 52 VOL: 639 MBF ALTERNATIVES: 2,3,5,6

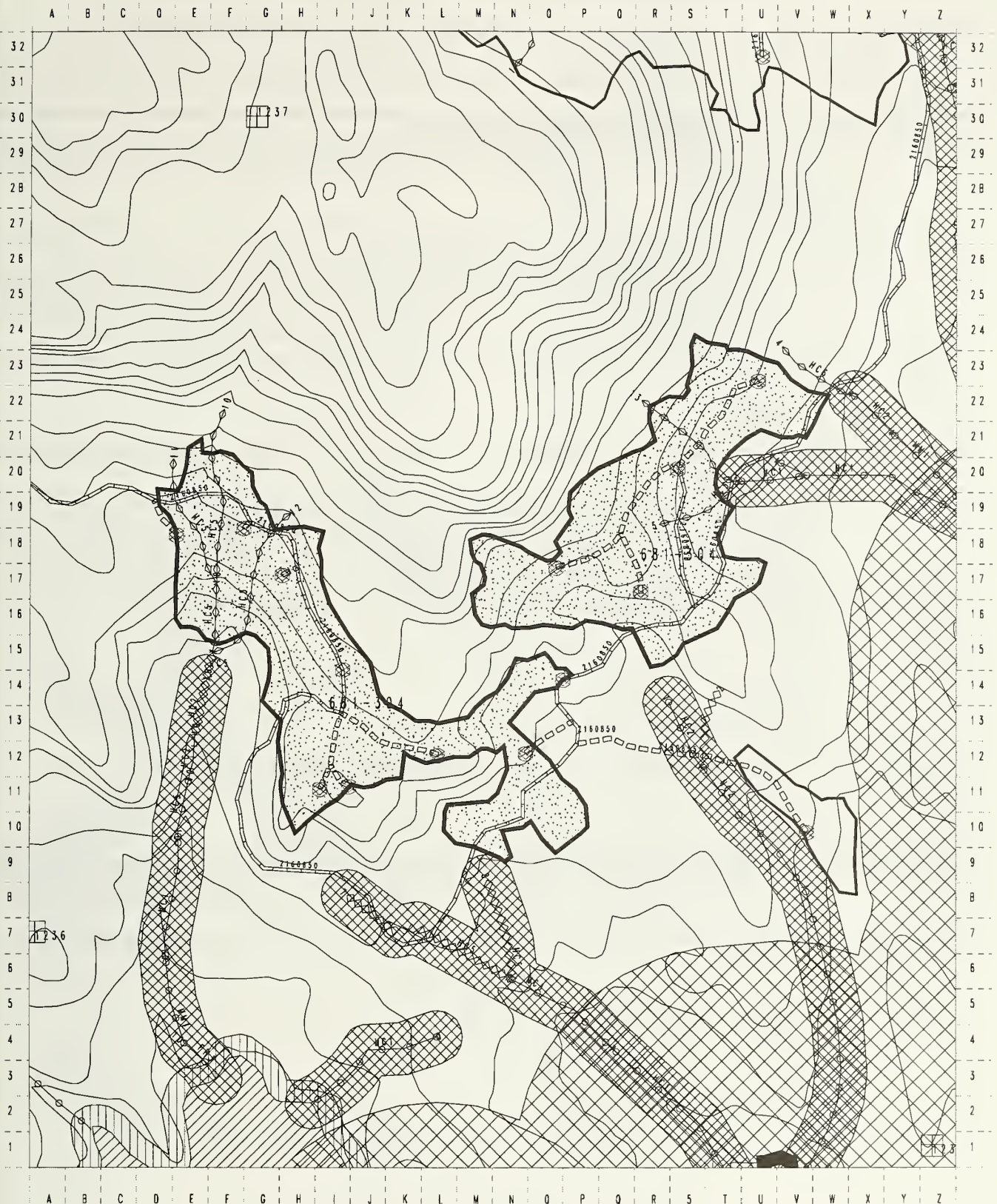
PHOTO YR/#: '72(53)-1872-31/'91(L46)-390-218 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER:68101-030, high windthrow risk. Productivity of site is low. Partial cut buffer. Adjacent to private selections. Difficult terrain - potential blind leads in several areas. Verify feasibility and modify unit bdry as required. Profiles needed. Road connections need work. High mistletoe infection.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/11/95 EIS R. Johnson	SOILS/WATERSHED: A minimum of partial suspension is required for MM13, McGilvery, and forested wetlands (BMPs 12.5, 13.9; TLMP 1997). Full suspension is needed along the north boundary to protect young regeneration (BMP 13.19). Locate backline in northeast and center portions of unit at the base of the first cliffs south of the old landslide to avoid MM14 and cliffs (BMP 13.5). Selective harvest in the addition west of the big cliff to protect regeneration that has grown following blowdown (BMPs 12.17, 13, 13.1). Unit should be designed to prevent blowdown. Protection of streams per fisheries, plus green and white protection for two additional streams (BMP 13.16). One stream is in the vicinity of fisheries #12 in the southwest corner of the unit, and the other is between fisheries #4 and #5. Minor amounts of Kitkun soil present (TLMP 1997). Additional information is filed in the reconnaissance folder.
G. Pierce 8/97	FISHERIES: Stream 4 is a class I blue/ white below the road that requires a 120' TTRA buffer, and road timing (BMP 12.6, 14.14). Above the road crossing stream 4 is a class IV green/ white. Stream 3 is a class IV green/ white. Stream 5 is a class I blue/ white below the road that requires a 100' TTRA buffer and requires fish timing (BMP 12.6, 14.14); the remainder of stream 5 is a class IV green/ white. Stream 10 was a class III orange/ white, under the new TLMP (1997) standards stream 10 is a class IV orange/ white. Stream 10 is flagged orange/ white to provide additional resource protection. Stream 11 is a class IV green/ white. Stream 12 is a class IV green/ white. The orange/ white streams require directional falling, and split yarding or full suspension. Clean streams of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
B.Johnston, A.Mueller 7/26/96	WILDLIFE:  This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This was not a high priority unit for wildlife following the current goshawk protocol, due to habitat requirements, and as a result was not surveyed in 1995.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Full suspension helicopter yarding along north boundary. Backline northeast and center base of first cliffs south of all landslide. Selective harvest by helicopter for add on west of big cliff. Dropped acreage due to steep cliffs and scrub timber. Monitor for PCT at 25+ years.



# Chosino Study Area Interim Layout NOI Unit 681-304 Alt 3

Mopscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Korst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |

# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 681-308 ACRES: 3 VOL: 30 MBF ALTERNATIVES: 2,3,5,6

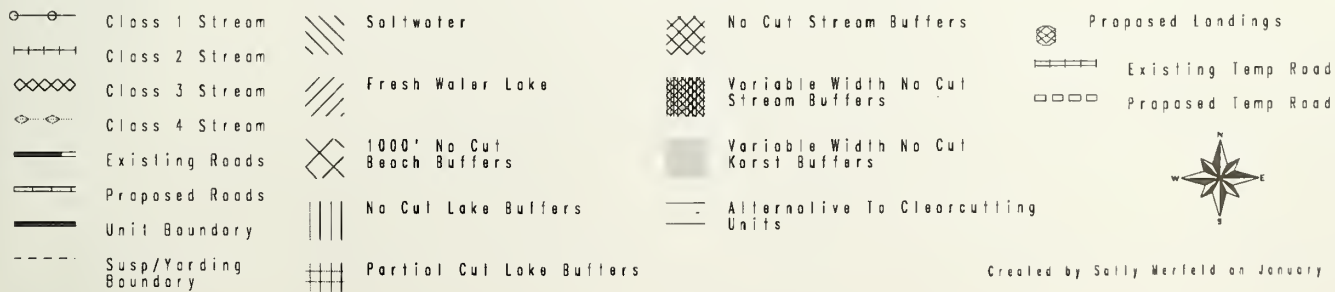
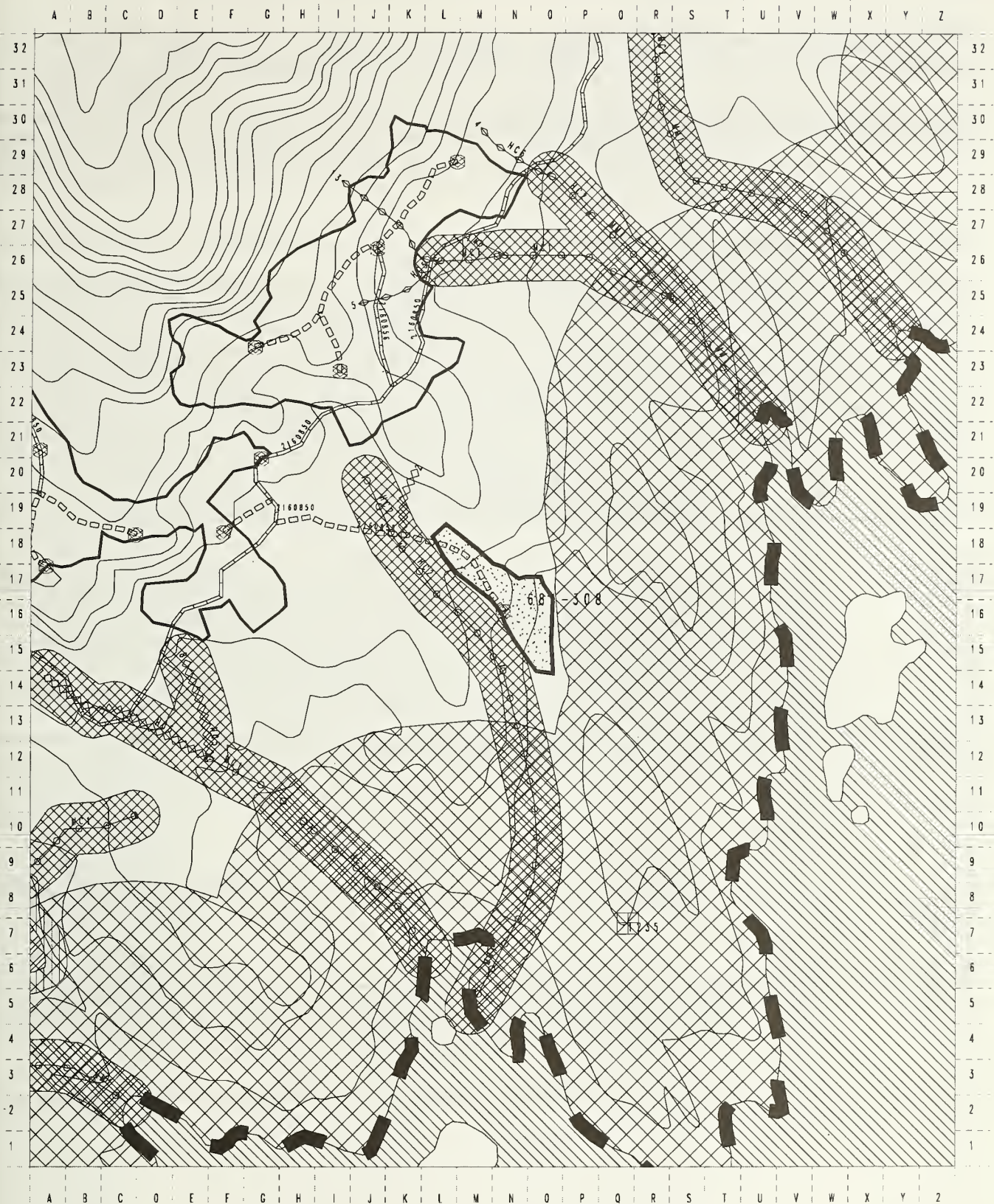
PHOTO YR#: '72(53)-1872-31/'91(L46)-390-218 1/4 QUAD: KTN A-6 NW 1/4 LOGGING SYSTEMS: RS

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68101-025, low windthrow risk. Productivity of site is low. Uneconomic, low volume area surrounding. Adjacent to estuary buffer. Dropped low volume area to the west and north. May not be economical if unit is at the end of a road.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 82D (McGilvery - Kitkun 35-60%) and 62 (Karheen - McGilvery 0-70%). Partial suspension for small portions of forested wetlands and McGilvery (BMPs 12.5, 13.9; TLMP 1997). Silviculture deleted W portion of unit, and moved east portion to S because of low volume wetlands (BMP 12.5). McGilvery and steep slopes reported in E portion. Protection of stream per fisheries (BMPs 12.6, 12.6a, 13.16). Deferred harvest on Kitkun and Karheen soils (TLMP 1997).
K. Buckley, D. Kuntzsch, B. Freedman, M. Greentree, 8/9/95	FISHERIES: Stream 1 is a class I blue/white stream that requires a 120' TTRA buffer (BMP 12.6).
C.Tighe 8/96	WILDLIFE:  This unit is within one-half mile of a known bald eagle nest. Road construction must be accomplished in accordance with the Bald Eagle Protection Act and must also comply with the MOU between the U.S. Fish and Wildlife Service and the Forest Service. Written coordination with the U.S. Fish and Wildlife Service must be documented. Wildlife recommends leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This was not a priority unit for wildlife due to habitat requirements according to current goshawk protocol and as a result it was not surveyed in 1995 or 1996. Maintain 1000 foot estuary buffer.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Beach buffer affects unit.



# Chosina Study Area Interim Layout NOI Unit 681-308 Alt 3

Mapscale 1:7920 (8 inch to Mile)





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

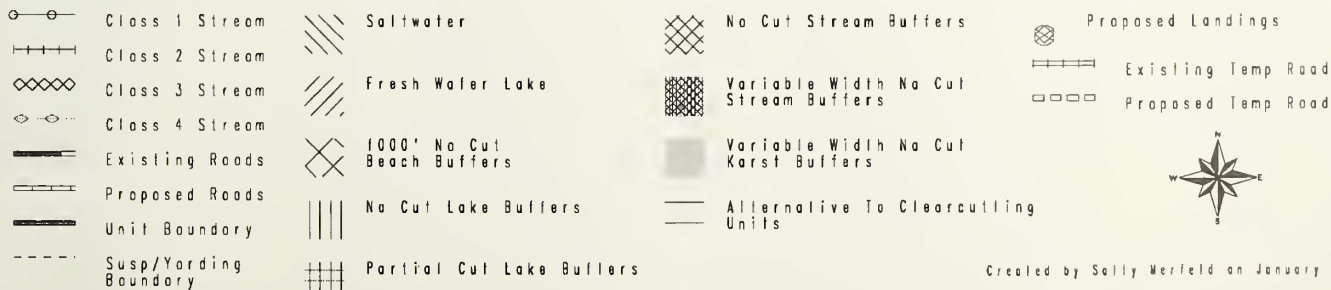
VCU-UNIT#: 681-363      ACRES: 31      VOL: 1178      MBF      ALTERNATIVES: 2, 3, 6

PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: SL/HE

REVIEWER & DATE	CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68102-33, high windthrow risk, portion downhill yarded, high mistletoe present. Retain stand structure for wildlife where feasible. Productivity of site is high. Partial cut buffer. Uneconomic, low volume area east & west ends. Drop cliffs on top. Cliffs in center of unit may force 2/3 of unit into helicopter yarding. Maintain setting width between units. Option: helicopter. Not an estuary buffer.
J. Oien 5/96	ROADS: No concerns.
field D.J.Landwehr 8/22/95 EIS R.Johnson	SOILS/WATERSHED: Upper boundary at 800' elevation. Elevations were measured in the field and may not correspond to those shown on the unit map. Minimum of partial suspension in areas that can be cable logged (BMP 13.9). May need to helicopter yard upper reaches of unit because of small cliffs, steep slopes and McGilvery (BMPs 13.9, 13.5; TLMP 1997). Exclude very steep slopes, cliffs, and McGilvery below 800' from clearcutting. Road in lower portion of unit only accesses 200 to 400 foot corridor; upper reaches of unit largely inaccessible from proposed road (BMP 14.2). Proposed action to helicopter yard is desirable to protect watershed resources (BMP 13.9). Protection of four streams per fisheries (BMP 13.16). Additional information is filed in the reconnaissance folder. Minor amounts of Kitkun soils present (TLMP 1997).
J. Hannon, M. Becker, 6/28/95	FISHERIES: Stream 1 is a class II blue/ white that requires a 100' TTRA buffer and a 25' buffer where stream becomes a class III orange/white (BMP 12.6). Stream 2 was a class III green/ white, under the new TLMP (1997) standards stream 2 is a class IV green/ white. Stream 3 was a class III green/ white, under the new TLMP (1997) standards stream 3 is a class IV green/ white. Stream 4 was a class III green/ white, under the new TLMP (1997) standards stream 4 is a class IV green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris before the end of the operating period or before the yarder leaves the area (BMP 13.16).
M.Dillman, J.Wrate 6/28/95	WILDLIFE:  Deer and bear sign seen in unit. Unit occurs in an important wildlife travel corridor. Therefore, wildlife recommends partial harvest to maintain forest structure to lessen impact on wildlife migration and dispersal. Unit is within one-quarter mile of a bald eagle nest. Therefore road construction activity may be restricted in accordance with the Bald Eagle Protection Act and coordination with the U.S. Fish and Wildlife Service must be documented. Also the MOU between the U.S. Fish and Wildlife Service and the U.S. Forest Service concerning bald eagle nests must be followed. The unit is also being considered for helicopter harvest and the nest location may impact fly/drop zones. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density if unit is not partial cut. This unit was not surveyed in 1996. The unit is over the steepness criteria called for in the current goshawk protocols. The final definition of an estuary and the buffer requirements on them may affect the acreage of this unit. As it is currently mapped in GIS the northwest corner, about 1/5 of the unit is in an estuary buffer.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concern.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 10% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut, use estuary buffer as retention. Minimum partial suspension. Exclude very steep cliffs, McGilvery soils. Unit added to the preferred alternative due to proportionality based on acres. 1/2 unit dropped for beach buffer. Monitor for PCT at 25+ years.

# Chasina Study Area Interim Layout N01 Unit 681-363 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 681-365 ACRES: 7 VOL: 175 MBF ALTERNATIVES: 2, 3, 4, 6

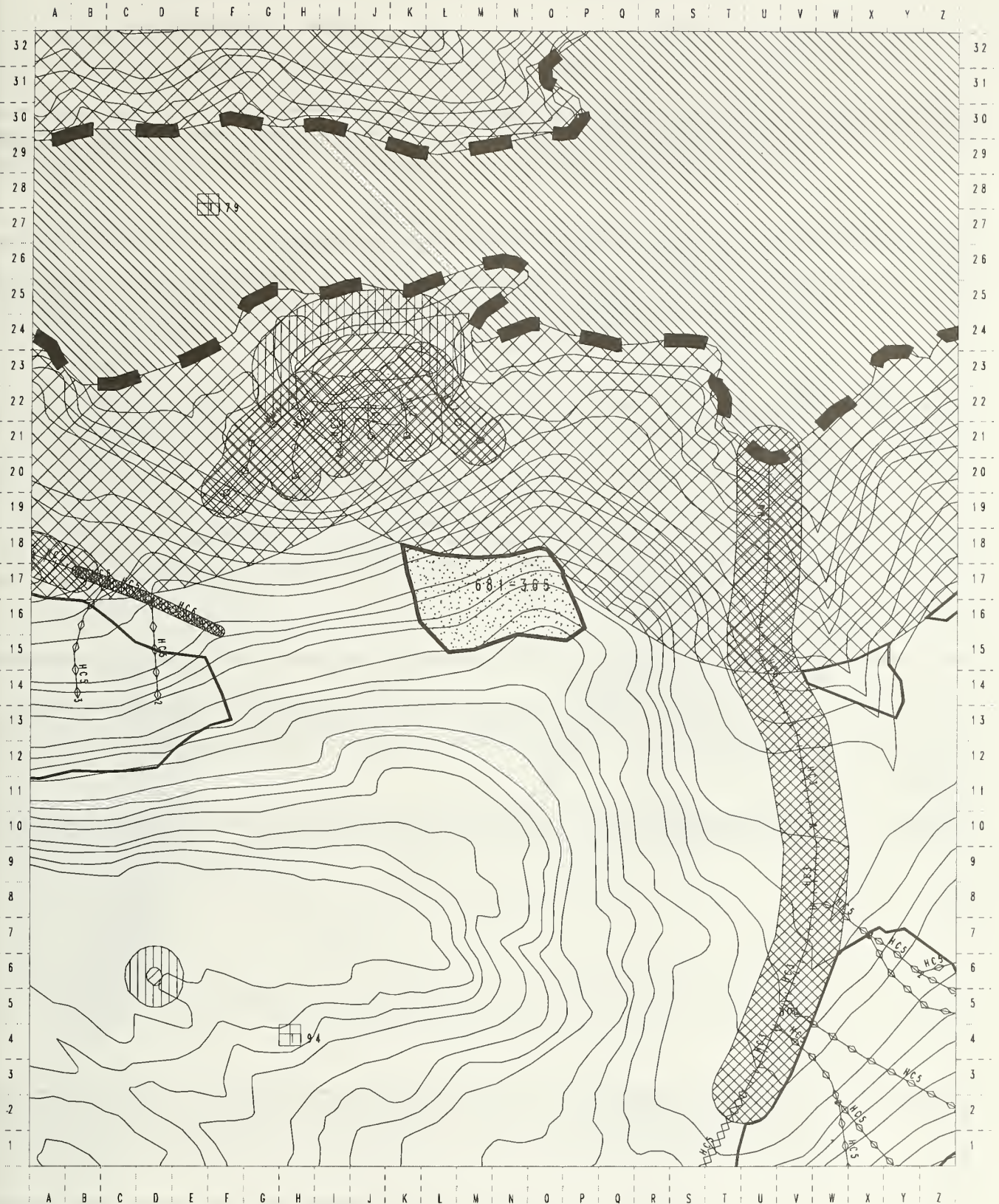
PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68102-030, high windthrow risk. Maintain setting width between units. <u>Stay out of estuary buffer.</u> Partial cut buffer. Productivity of site is moderate. Portion of unit dropped due to lake. If road comes from the east from above, visually try to keep strip slightly NW. Option: helicopter yarding.
J. Oien 5/96	ROADS: Difficult roading - no concerns.
D.J.Landwehr 8/25/95 R.Johnson 5/31/96	SOILS/WATERSHED: Steep areas and McGilvery on the east and west sides of the unit will be reviewed during layout (BMPs 13.1, 13.5 ; TLMP 1997). Partial suspension for inclusions of forested wetlands and McGilvery in the remaining bowl (BMPs 12.5, 13.9; TLMP 1997). Upper backline should be about 550' elevation. Elevation was measured in the field and may not correspond to those shown on the unit map. Proposed helicopter yarding is preferred because of potential problems with the 2160-653 road (BMP 14.2). Streams have been largely eliminated from unit and should be protected by suspension (BMP 13.16). Additional information is filed in the reconnaissance folder. Minor amounts of Kitkun and Kaikli soils present (TLMP 1997).
J. Hannon, M. Becker, 6/28/95	FISHERIES: Lake is a class 1 blue/ white adfluvial that requires a 200' TTRA buffer (BMP 12.6). Stream 1 is a class III orange/ white that requires directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). Recommend that the unit boundary be above the slope break of this stream. Stream 2 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 3 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 4 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 5 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Stream 7 is a class 1 blue/ white that requires a 120' TTRA buffer (BMP 12.6). None of these stream are within the unit boundaries.
M.Dillman, J.Wrate, M. Pacheco 6/29/95 M.Dillman 7/96 T.Belfield, C.Tighe 7/27/96	WILDLIFE:  Game trails/deer sign seen in unit. Lake found in unit. Karst in unit/cave located. Bald eagle nest found. Road construction activities may be restricted in accordance with the Bald Eagle Protection Act and all coordination with the U.S. Fish and Wildlife Service must be documented. The MOU between the U.S. Fish and Wildlife Service and the U.S. Forest Service concerning eagle nests must also be followed. If this unit is harvested by helicopter the eagle nest location may impact drop zones. The acreage may be affected depending on the final definition of an esuary buffer. As it is currently mapped in GIS the northeast corner of the unit would have to be dropped to meet the estuary buffer requirements. Sharp-shinned hawks were found in this unit. There were two birds seen, both young, and two birds heard. Sensitive plant surveys were conducted in this unit. <u>Platanthera chorisia</u> , the choris bog orchid, a species on the sensitive plant list, was found in the vicinity of this unit.
J.Baichtal 5/15/96	GEOLOGY/MINERALS: No minerals concerns, access for harvest will improve mineral exploration access. A low elevation karst ridge runs along the north shore of the lake and into the northeast end of the unit. A small cave inside lake buffer. Outlet stream of lake flows into sinkhole and resurges a short distance later. Epikarst is well developed atop the ridge in the unit (Soils Report). Karst ridge should be excluded from the unit based on epikarst development as per the standards and guidelines outlined in the RSDEIS for the TLMP.  LANDS:
T. Fifield 10/28/96	CULTURAL: Although scheduled for survey in 1996, field inspection indicated this unit was very unlikely to contain cultural resources. No survey was conducted. There are no concerns with this unit as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: Full suspension required; recommend unit deletion due to presence of very thin McGilvery soils. Clearcut with reserves: retain 10-20% of cutting unit, where safe and feasible. Use type C clearcut. Delete for beach buffer, steep McGilvery soils. Monitor for PCT at 25+ years.



# Chasina Study Area Interim Layout NO1 Unit 681-365 Alt 3

Mapscale 1:7920 (8 inch to Mile)



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 681-367      ACRES: 16      VOL: 240      MBF      ALTERNATIVES: 2, 3, 4, 6

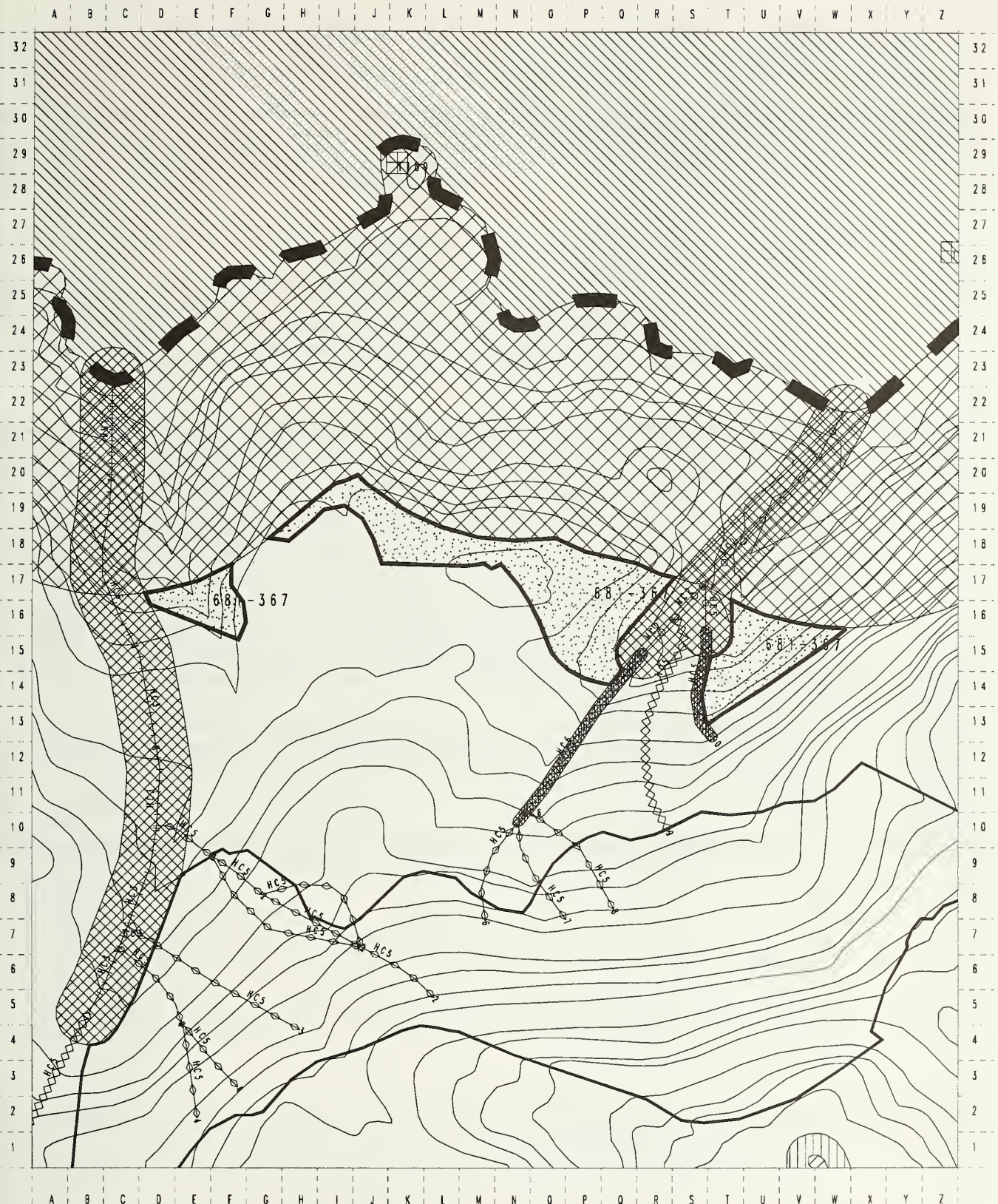
PHOTO YR/#: '91-390-170      1/4 QUAD: CRG A-1 SE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68102-26, high windthrow risk. Productivity of site is low. 1/2 of unit is within estuary buffer. Partial cut buffer. Maintain setting width between units. If road comes from above, could use strip corridors. Uneconomic, low volume area surrounding. Option: helicopter.
J. Oien 5/96	ROADS: Difficult access - some concerns.
Field D.J.L.andwehr 8/28/95 EIS R.Johnson	SOILS/WATERSHED: Partial suspension for MMI3 and thin soils (BMP 13.9; TLMP 1997). Addition below large cliff previously in northeast portion of unit 681-368, needs full or good partial suspension to mitigate landslide and protect soil productivity (BMPs 13.5, 13.9). Protection of streams per fisheries (BMP 12.6a). Minor amounts of Kaikli soil present (TLMP 1997). Additional information is filed in the reconnaissance folder.
J. Hannon, M. Becker 6/24/95	FISHERIES: Stream 1 is a class II orange/white that requires a 100' AHMU buffer up to 80' of elevation. Above this the stream has a short length of Class III that is lumped into the Class II section below the unit. Near the unit, the stream requires a 150' buffer (BMP 12.6). East parts of unit ( old unit 681-368) Stream 1 is a class II orange/ white that will require a 150' AHMU buffer near the unit (BMP 13.16). Stream 2 was a class III green/ white, under the new TLMP (1997) standards stream 2 is a class IV green/ white. Stream 6 is a class I blue/ white that requires a 120' TTRA buffer (BMP 13.16). Above 180' of elevation stream 6 is a class III orange/ white that requires a 100' buffer (BMP 13.16), and then stream 6 requires a slope break buffer. The west slope break of stream 6 should be the unit boundary. Stream 10 is a class I blue/ white that requires a 120' TTRA buffer (BMP 12.6). Above 130' of elevation stream 10 is a class III orange/ white. The east slope break of stream 10 should be the unit boundary. The orange/ white streams require directional falling, split yarding or full suspension, and immediate cleaning of introduced debris from the channel (BMP 13.16).
M.Dillman, J.Wrate, M. Pacheco 6/29/95 C.Tighe, B.Johnston 5/31/96	WILDLIFE:  Game trails and bear sign in unit. Wolf scat seen in muskeg above unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. The acreage of this unit may be affected depending on the final definition of an estuary buffer. As the unit is currently mapped in GIS, and with the current estuary buffer definition, the western half of the unit needs to be dropped.
J.Baichtal          T.Fifield 10/28/96	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.          LANDS:          CULTURAL: Although scheduled for survey in 1996, field inspection indicated that this unit was unlikely to contain cultural resources (very steep). No survey was conducted. There are no concerns with the unit as planned.          VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Uneven-aged Mgmt</u> : for regeneration and structure retention. Strip corridors selection if cable yarding uphill. Helicopter yarding is an option with overstory removal of 16" DBH limit. A lot of scrub (12 acres dropped). Partial suspension required throughout unit for soils protection. Combine the helicopter portions of 367& 368. Buffer (beach) deletes most of unit. Monitor for PCT at 25+ years.



# Chasinga Study Area Interim Layout N01 Unit 681-367 Alt 3

Mapscale 1:7920 (8 inch to Mile)



Created by Sally Werfeld on January 12, 1998



## CHASINA PROJECT HARVEST UNIT DESIGN CARD

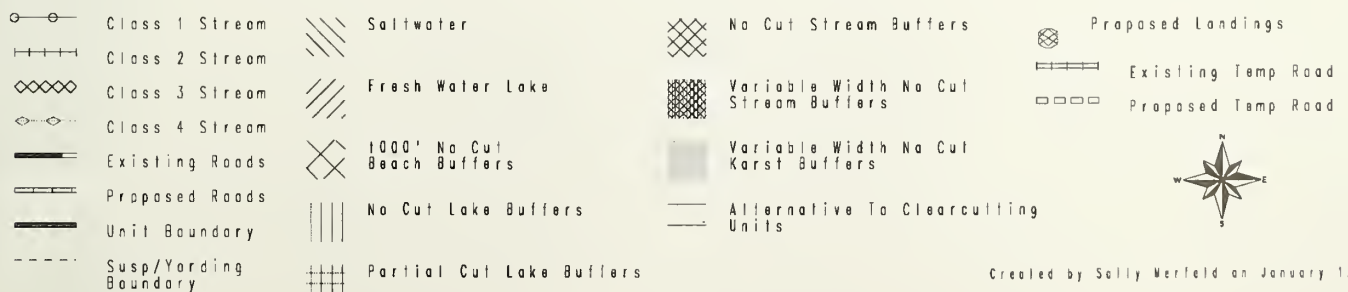
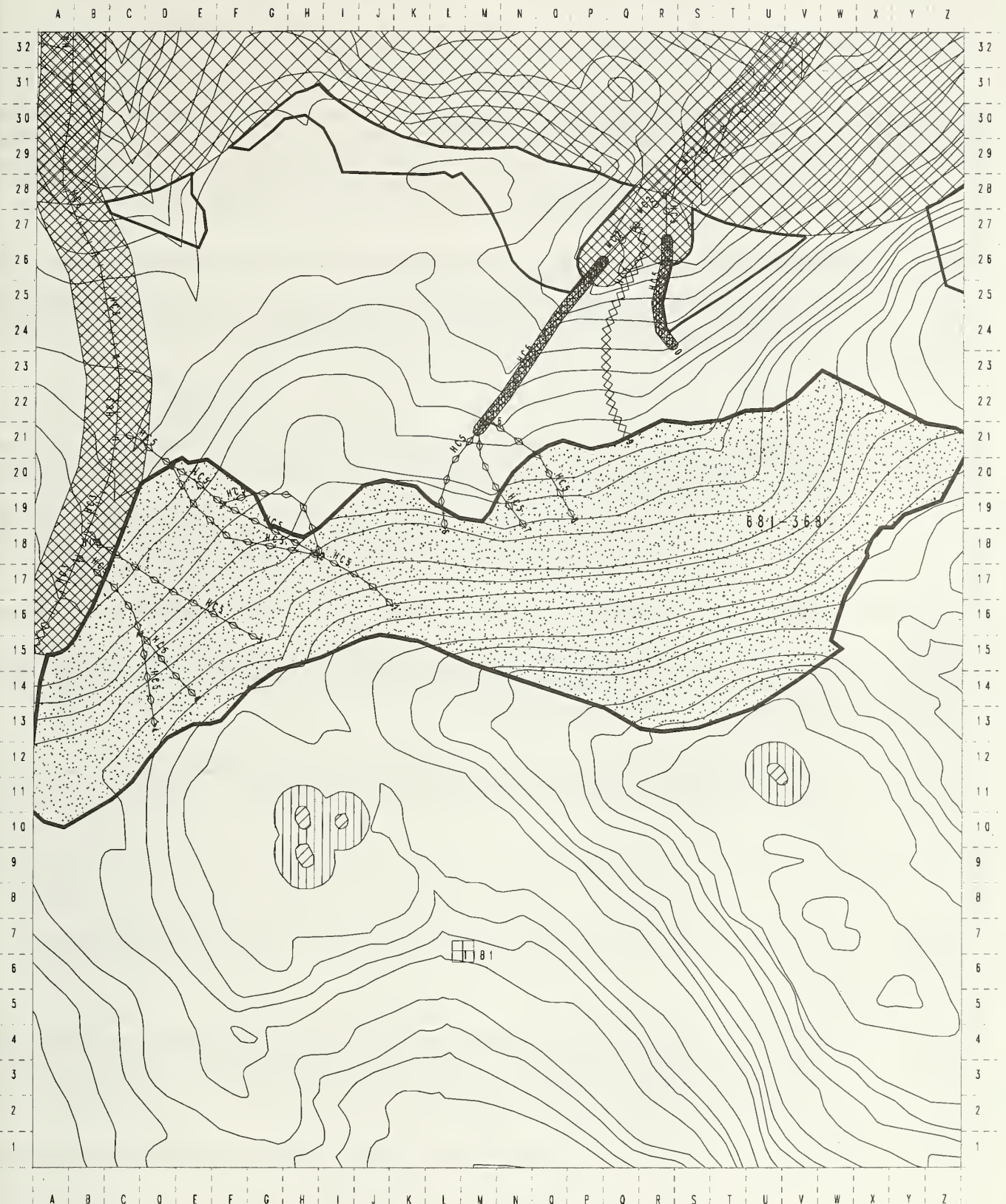
VCU-UNIT#: 681-368      ACRES: 96      VOL: 2503      MBF      ALTERNATIVES: 2, 3, 4, 6

PHOTO YR/#: '91-390-170 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: SL/HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68102-020 & 122, high windthrow risk. Productivity of site is moderate. Split-yarding required on stream. Partial cut buffer. Maintain setting width between units. Center portion dropped for stream braiding. Reach as high as possible upslope for downhill yarding. Lower may not be feasible with extensive road building. Option: helicopter yarding.
J. Oien 5/96	ROADS: minimal timber - Recommend helicopter logging for these units.
Field D.J.Landwehr 8/24/95 EIS R.Johnson	SOILS/WATERSHED: A minimum of partial suspension for MMI3 soils, McGilvery soils, and steep slopes (BMPs 13.9, 13.5; TLMP 1997). McGilvery predominates in the upper portion of the unit and will be reviewed during layout. Minor amounts of Kitkun and Kaikli soils present (TLMP 1997). Protection of streams per fisheries, plus put slope break buffers above fish habitat on the two main creeks and on portions of two tributaries because of MMI4 soils (BMPs 12.6a, 13.5). Additional roading may be needed for partial suspension (BMP 14.2). Additional information is filed in the reconnaissance folder.
J. Hannon, M. Becker, 6/29/95	FISHERIES: Stream 1 is a class II orange/ white that will require a 150' AHMU buffer (BMP 13.16). Stream 2 was a class III green/ white, under the new TLMP (1997) standards stream 2 is a class IV green/ white. Stream 3 was a class III orange/ white (mistakenly flagged green/ white), under the new TLMP (1997) standards stream 3 is a class IV orange/ white. Stream 3 should be flagged orange/ white to provide additional resource protection. Stream 4 has two forks, the east fork was a class III green/ white, the west fork was a class III orange/ white. Under the new TLMP (1997) standards the east fork should be a class IV green/ white, and the west fork a class IV orange/ white. The west fork of stream 4 is flagged orange/ white to provide additional resource protection. Stream 6 was a class III green/ white, under the new TLMP (1997) standards stream 6 is a class IV green/ white. Stream 7 was a class III orange/ white, under the new TLMP (1997) standards stream 7 is a class IV orange/ white. Stream 7 is flagged orange/ white to provide additional resource protection. Stream 8 was a class III orange/ white, under the new TLMP (1997) standards stream 8 is a class IV orange/ white. Stream 8 is flagged orange/ white to provide additional resource protection. The orange/ white streams require directional falling, and split yarding or full suspension. Clean stream of introduced debris immediately (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate, C.Crocker- Bedford, M.Pacheco 7/5/95 C.Tighe, A.Mueller 6/21/96	WILDLIFE:  Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/21/96 Pygmy owl heard in unit at goshawk calling station #2. Good wildlife snags in southern part of unit. Deer sign, beds, pellets seen in unit. Game trails throughout unit. Rocky ridge on south side of unit. Wolf heard in area of muskeg to the southwest of the unit.
J.Bauchtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.   LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves;</u> retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type B clear-cut, use buffers as retention. Soils to look at. Minimum of partial suspension. Full suspension addition below cliff northeast. Should delete upper portion of unit due to McGilvery soils (compliance with TLMP 1991). Helicopter lower portions to combine into 368. Drop lower road. Many stream buffers. May have to helicopter the upper southern portion. Too isolated for PCT in future.

# Chasina Study Area Interim Layout N01 Unit 681-368 Alt 3

Mapscale 1:7920 (8 inch to Mile)



Created by Sally Werfeld on January 12, 1998



## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 681-372      ACRES: 23      VOL: 653      MBF      ALTERNATIVES: 2, 3, 6

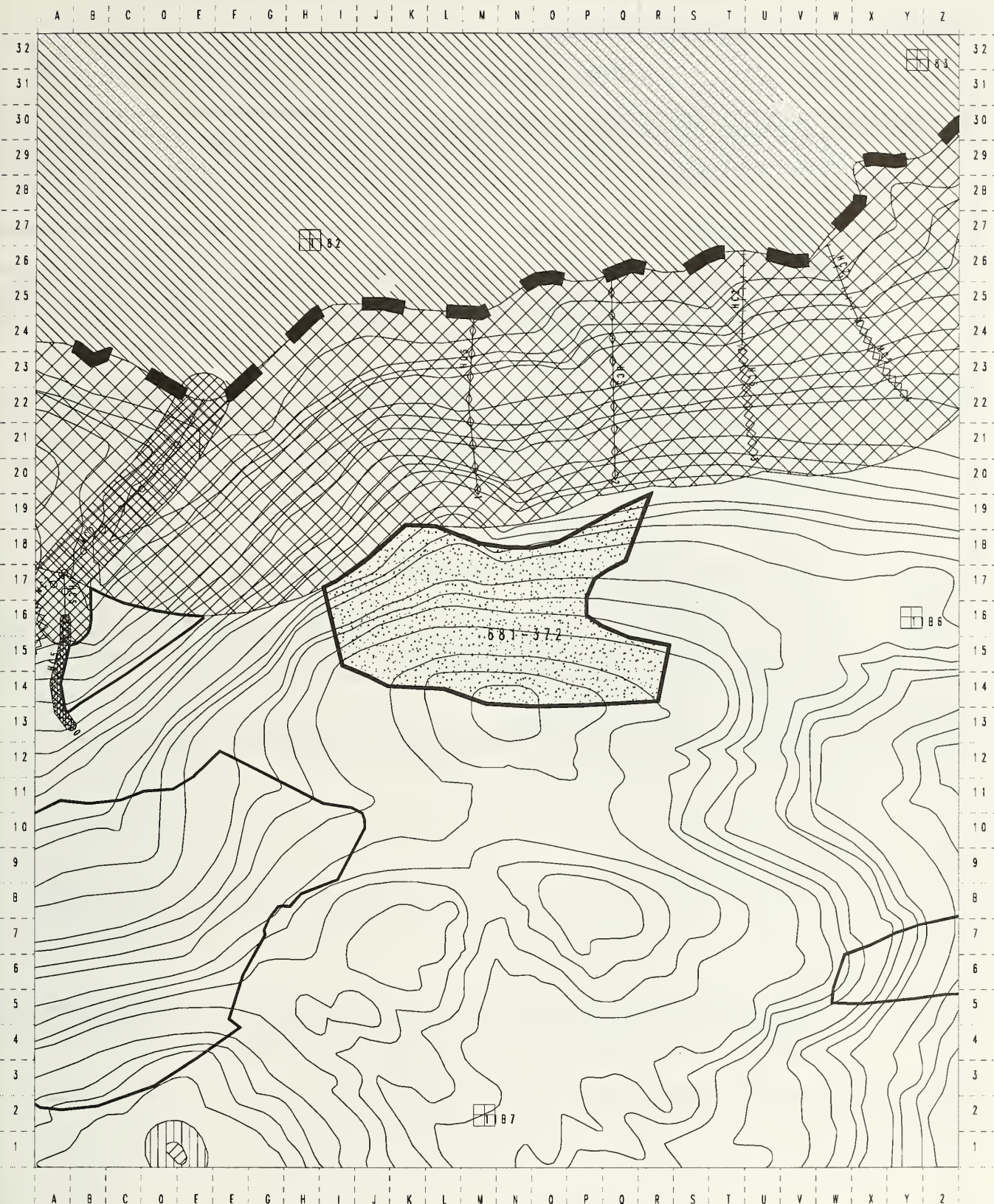
PHOTO YR/#: '91-390-213      1/4 QUAD: CRG A-1 SE 1/4      LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68101-12, high windthrow risk. Unit changed to provide proportionality of volume classes. Productivity of site is moderate. Stay out of estuary buffer. Helicopter yarding method above cable reach of lower unit, adjust bdy accordingly. Due to helicopter at lower end below cliffs (681-383). Keep off of cliffs. Uneconomic, low volume area east tip. Suspension requirements (see soils or fish). Visual concerns could be lowered by retaining trees in area above cliffs. Spruce promoted by exposed soils. Option: helicopter, strip corridors. Several acres dropped due to estuary buffer.
J. Oien 5/96	ROADS: No concerns - road costs high for last 1/2 mile of road access.
Field D.J.Landwehr 9/15/95 EIS R.Johnson	SOILS/WATERSHED: Minimum of partial suspension required on the minor amounts of McGilvery, MMI3, and forested wetlands (BMPs 12.5, 13.9; TLMP 1997). Minor amounts of Kitkun soil present (TLMP 1997). Keep slash out of the dry V-notch on the west boundary (BMP 13.16). Additional information is filed in the reconnaissance folder.
J. Hannon, J. Wrate, 6/30/95	FISHERIES: Stream 1 was a class III orange/ white, under the new TLMP (1997) standards stream 1 is a class IV orange/ white. Stream 1 is flagged orange/ white to provide additional resource protection. Stream 2 was a class III green/ white, under the new TLMP (1997) standards stream 2 is a class IV green/ white. The orange/ white streams require directional falling, split yarding or full suspension, and immediate cleaning of introduced debris (BMP 13.16). The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16). There is a 1000' beach buffer adjacent to this unit that contains stream 1 and 2. Streams 1 and 2 are not within the unit boundaries.
J.Wrate, J.Hannon 6/30/95 C.Tighe, A.Mueller, B.Johnston 7/25/96	WILDLIFE:  Game trails, deer sign, and bear sign seen in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. The acreage of this unit may be slightly effected depending on the final definition of an estuary and its buffer requirements. As this unit is mapped in GIS and using the current estuary buffer definition the unit will lose the northwestern tip.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Soils to look at. Minimum partial suspension. Keep slash out of dry V-notch W boundary. Should delete almost all of the unit above the cliff for compliance with McGilvery soils protection (TLMP 1991).



# Chasina Study Area Interim Layout NOI Unit 681-372 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |                       |                            |                                      |                    |
|-----------------------|----------------------------|--------------------------------------|--------------------|
| Class 1 Stream        | Saltwater                  | No Cut Stream Buffers                | Proposed Landings  |
| Class 2 Stream        | Fresh Water Lake           | Variable Width No Cut Stream Buffers | Existing Temp Road |
| Class 3 Stream        | 1000' No Cut Beach Buffers | Variable Width No Cut Karst Buffers  | Proposed Temp Road |
| Class 4 Stream        | No Cut Lake Buffers        | Alternative To Clearcutting Units    |                    |
| Existing Roads        | Partial Cut Lake Buffers   |                                      |                    |
| Proposed Roads        |                            |                                      |                    |
| Unit Boundary         |                            |                                      |                    |
| Susp/Yarding Boundary |                            |                                      |                    |



# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 681-373 (Actually 682-373) ACRES: 21 VOL: 660 MBF ALTERNATIVES: 3,4,6

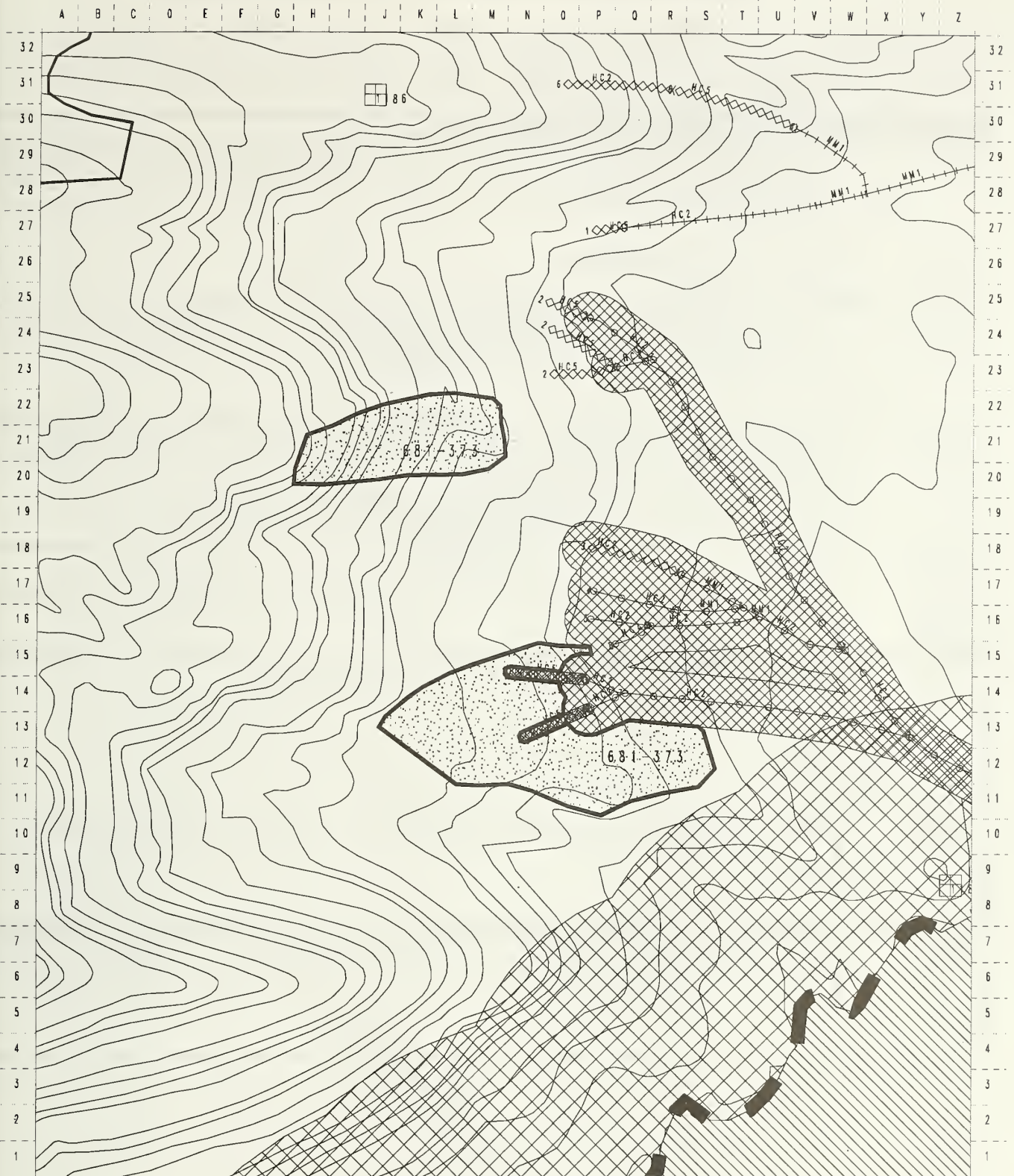
PHOTO YR/#: '91-390-212 1/4 QUAD: CRG A-1 SE 1/4 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68202-047, high windthrow risk, portion downhill yarded. Productivity of site is moderate. Road should be adjusted to come into northern section. Uneconomic, low volume area central portion of unit. Partial cut buffer. Anticipate planting 20 acres of Alaska yellow cedar to maintain composition. Option: helicopter yarding.
J. Oien 5/96	ROADS: No concerns.
R.Johnson 6/96	SOILS/WATERSHED: Soils mapped 33E (StNicholas - McGilvery 60-75%), 75D (Kupreanof - McGilvery 35-60%). Partial suspension for MMI3, forested wetland, and McGilvery (BMPs 12.5, 13.9; TLMP 1997). Probable deletion for MMI4 on north end of unit, was included in deletion by silviculture (BMP 13.5). Silviculture deleted low volume wetlands in all but areas on the SE corner and the W center parts of the unit (BMP 12.5). Protection of streams per fisheries (BMPs 12.6a, 13.16).
M.Becker, J.Hannon, 7/6/95 D.Kuntzsch, 7/96	FISHERIES: New unit boundaries should exclude most fisheries concerns. Stream 7 branches just within the east boundary of the south unit section. Below the unit boundary stream 7 is a class II blue/white TTRA stream; this reach requires 120' no-cut buffer. Within the unit both branches of stream 7 become class III orange/white. Both branches of stream 7 require slope break buffers. The orange/ white streams, if not buffered, require directional falling, split yarding or full suspension over, and immediate removal of logging debris (BMP 12.6a, 13.16).
D.Parker, C.Crocker- Bedford, N.Matson, E.Campbell 7/6/95 M.Dillman B.Johnston 6/20/96	WILDLIFE:  Marbled murrelet eggshell fragments found in southwest corner of unit (goshawk calling station 8). Deer sign seen throughout the unit. Several patches of grass in unit. Snag patches in unit also. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 6/20/96 Found both red and Sitka alder in area as well as Pacific yew trees. Spent some time looking for more marbled murrelet eggshells. Strange gray bedrock in streams.
J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.
T.Fifield 10/28/96	LANDS:  CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.  VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Partial suspension required. Economics very poor due to long road and difficult helicopter water drop exposed.



# Chosina Study Area Interim Layout NO1 Unit 681-373 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |





## CHASINA PROJECT HARVEST UNIT DESIGN CARD

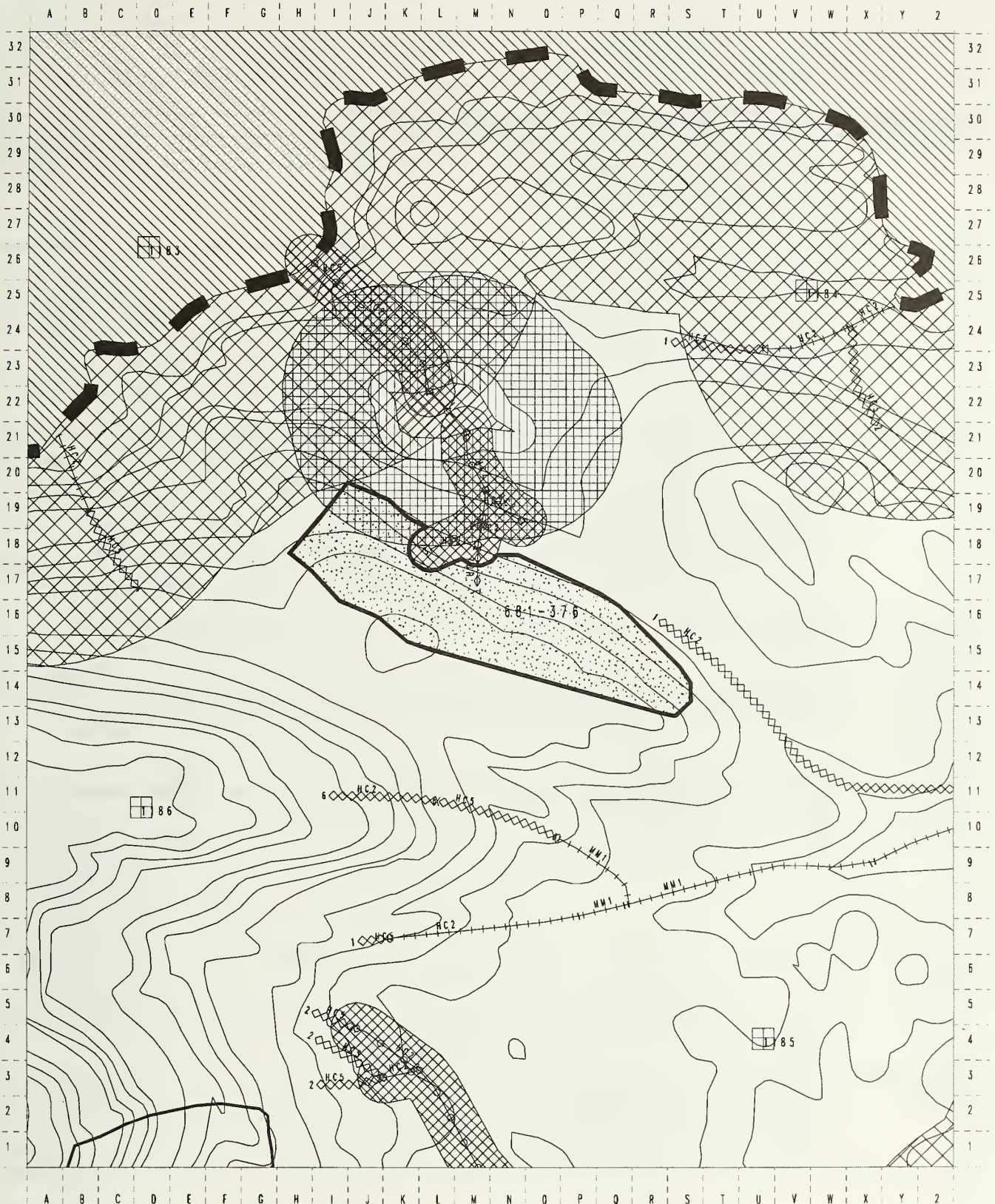
VCU-UNIT#: 681-376      ACRES: 19      VOL: 400      MBF      ALTERNATIVES: 2, 3, 4, 6

PHOTO YR/#: '91-390-213 1/4 QUAD: CRG A-1 LOGGING SYSTEMS: HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER: 68101-7, low windthrow risk, portion downhill yarded, high mistletoe present. Unit changed to provide proportionality of volume classes. Productivity of site is low. Maintain setting width between units. Drop NW corner - low volume. Keep road out from toe slope for deflection. Narrow unit to mitigate visual concerns and YC seed dispersal. Lake buffer. Anticipate planting 10 acres of Alaska yellow cedar to maintain composition. Road may be realigned. Option: helicopter but low volume.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 9/15/95 EIS R.Johnson	SOILS/WATERSHED: Full suspension is required in the middle of the unit because of shallow McGilvery soils on convex slopes and rock outcrops (TLMP 1997). Partial suspension is required in the remainder of the unit for MMI3 (BMP 13.9). The McGilvery will be reviewed during layout to determine suitability. Protection of streams and lake per fisheries (BMPs 12.6, 12.6a, 13.16). Additional information is filed in the reconnaissance folder.
J. Hannon, M. Becker, N. Matson, 7/5/95	FISHERIES: The Class I adfluvial lake on the northeast boundary requires a 100' no cut/ 400' partial cut buffer (BMP 12.6). Stream 2 is a Class I blue/ white that requires a 120' TTRA buffer (BMP 12.6) Stream 3 is a class I blue/ white stream that requires a 100' TTRA buffer (BMP 12.6). This stream becomes Class III green/ white part way into the unit. Under the new TLMP (1997) standards this section of stream 2 is a class IV green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating season or before the yarder leaves the area (BMP 13.16).
M.Dillman, M.Pacheco 6/30/95 M.Dillman, B.Johnston 6/20/96	WILDLIFE:  Moss/hemlock understory. Karst and blowdown in unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
J.Baichtal          T.Fifield 10/28/96	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.          LANDS:       CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.    VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type A clear-cut. Full suspension middle of unit; this section should be deleted from the unit based on percent of McGilvery present (TLMP 1991). Partial suspension remainder. "Unit added from the preferred alternative due to proportionality based on acres." Very poor economics.

# Chosina Study Area Interim Layout NOI Unit 681-376 Alt 3

Mapscale 1:7920 (8 inch to Mile)





# CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 682-301      ACRES: 54      VOL: 1719      MBF      ALTERNATIVES: 3,4,6

PHOTO YR/#: '91-390-171      1/4 QUAD: CRG A-1      SE 1/4      LOGGING SYSTEMS: SL / Helicopter

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER:68202-064, high windthrow risk. Productivity of site is high. Visually sensitive. Uneconomic, low volume area east and south. Adjacent to old growth reserve. Estuary buffer at bottom probably coincides with steep drop-off blind-lead area which parallels shoreline at about 55'. Option: helicopter yarding / strip corridors.
J. Oien 5/96	ROADS: No concerns.
Field D.J.Landwehr 9/12/95 EIS R.Johnson.	SOILS/WATERSHED: Minimum of partial suspension for MM13 and McGilvery (BMP 13.9; TLMP 1997). Locate west boundary on top of the nearly continuous 40' cliff. May need to delete an additional five acres of low volume timber along the northeast side of the unit. Orange and white protection of the south boundary stream, and the middle stream and v-notch (BMP 13.16). Green and white protection for one stream on each side of the middle stream (BMP 13.16). Two to three acres above the cliff/slope break and adjacent to these streams may not be suitable for harvest. May need to helicopter yard because of limitations with the road (BMPs 13.9, 14.2). Minor amounts of Kaikli soil present (TLMP 1997). Additional information is filed in the reconnaissance folder.
K. McCartney, K.Buckley, 5/28/96	FISHERIES: Stream 3 was a Class III orange/white, under the new TLMP (1997) standards stream 3 is a class IV orange/ white that is 3 feet wide, has 6 feet of incision, and a gradient of 31%. Stream 3 is flagged orange/ white to provide additional resource protection. Stream 4 is a class IV green/ white. Stream 5 is a class IV green/ white. Stream 6 is a class IV green/ white. If stream 5 or 6 is found to be a V-notch, protection level should be raised to a Class III orange/white (see soils section). Stream 7 is a class III orange/white (soils located this stream). The class III streams should be reviewed during unit layout to determine the need for class III buffers. More streams than noted here are probable within unit. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean stream of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16). The orange/white streams require directional falling, and split yarding or full suspension. Clean streams of introduced logging debris immediately.
D.Parker, J.Wrate, M.Pacheco 7/18/95 C.Tighe, B.Johnston 5/28/96	WILDLIFE:  Wolves heard howling and snarling from goshawk calling station 6 (middle of the unit). Deer browse, pellets, and game trails seen throughout unit. No bear sign seen. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 5/28/96 Unit has snags throughout area. Sapsucker holes in trees and snags. Survey was not actually in the unit but just below it. Unit exceeds the steepness criteria in the current goshawk protocol. Maintain 1000 foot estuary.
J. Short 5/96 J.Baichtal	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.  LANDS:
T.Fifield 10/28/96	CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.
J.Short 12/17/97	VISUALS: To meet the maximum modification VQO, retain about 3 acres in each of the upper corners of this unit - in effect angling the boundaries at these corners. About 1/3 the distance from the north corner (where the backline makes a pronounced jog) retain about (5-6) .5 to 1.5 acre islands randomly scattered along the middle section of the backline.
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> : retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type D clear-cut. Feather backline with retention islands along top boundary as suggested by visuals section. Minimum partial suspension. West boundary top of cliff. Delete 5 acres low volume northeast. Drop minor amount on bottom due to beach buffer. Monitor for PCT at 20 years.



# Chasina Study Area Interim Layout NO1 Unit 682-301 Alt 3

Mapscale 1:7920 (8 inch to Mile)



## CHASINA PROJECT HARVEST UNIT DESIGN CARD

VCU-UNIT#: 682-302 ACRES: 36 VOL: 1015 MBF ALTERNATIVES: 3, 4, 6

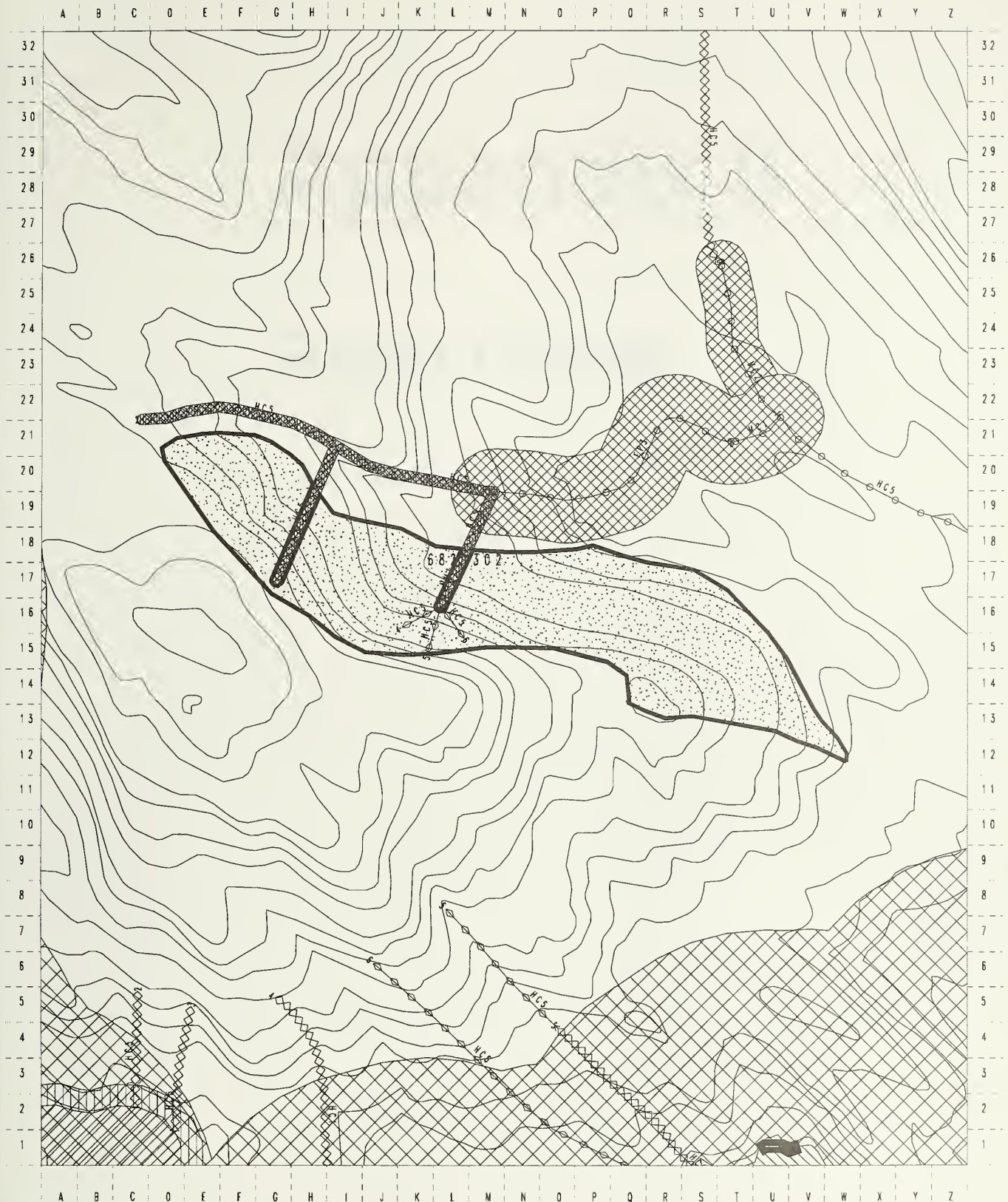
PHOTO YR/#: '91-390-172      1/4 QUAD: CRG A-1 SE 1/4      LOGGING SYSTEMS: RS /HE

REVIEWER&DATE	RESOURCE CONSIDERATIONS/RECOMMENDATIONS
G.Lawton 12/97	SILVICULTURE/TIMBER:68202-012, high windthrow risk, portion downhill yarded, high mistletoe present. Productivity of site is high / moderate. Uneconomic, low volume area surrounding. Maintain setting width between units. Steep slopes may limit yarding. Helicopter yarding method above cable reach of lower unit, adjust bdry accordingly. Due to resource protection (682-307). Option: running skyline.
J. Oien 5/96	ROADS: No concerns.
D.J.Landwehr 9/13/95 R.Johnson 5/30/96	SOILS/WATERSHED: Elevation on the east end of the unit should be 300' rather than the 200' shown on the unit card. Upper backline is about 500'. Elevations were measured in the field and may not correspond to those shown on the unit map. Minimum of partial suspension for most of the unit for MMI3 and McGilvery soils (BMP 13.9; TLMP 1997). Full suspension is required on small areas of slopes over 75% (BMP 13.5). May need to delete three acres of low volume timber west of the green and white stream in the west end of the unit. Orange and white protection on the north boundary stream (upper portion of fisheries #2 which is in a V-notch), and a short tributary to this stream that lies in the unit (lower end of fisheries #5) (BMP 13.16). Green and white protection on the upper end of fisheries stream #5. Limitations with proposed road and need for additional roading favor converting unit to helicopter yarding (BMP 14.2). Additional information is filed in the reconnaissance folder.
K. McCartney, K. Buckley, C. Tighe, B. Johnston, 5/30/96	FISHERIES: Stream 1 is a class I blue/ white TTRA that requires a 200' buffer; this stream is outside the unit. Stream 2 is a class I blue/ white that requires a 200' TTRA buffer (BMP 12.6). Above the confluence with stream 5, stream 2 becomes a class III orange/ white. The southern slope break of stream 2 should be the northern unit boundary. Stream 3 is a class III orange/ white that is 10 feet wide, has 16 feet of incision and 18% gradient. Stream 3 requires a slope break buffer (BMP 13.16).- Stream 5 is a class III orange/ white that is 7 feet wide, has 13 feet of incision, and 4% gradient. This section of stream 5 requires a slope break buffer (BMP 13.16). Above 380' of elevation stream 5 becomes a class IV green/ white. Stream 6 is a class IV green/ white. The green/ white streams require directional falling, and split yarding (where practical) or partial suspension. Clean streams of introduced debris by the end of the operating period or before the yarder leaves the area (BMP 13.16).
D.Parker, J.Wrate 7/19/95 C.Tighe, B.Johnston K.Buckley , K.McCartney 5/30/96	WILDLIFE:  Deer sign throughout unit. No understory vegetation. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Good wildlife snags in unit.
J.Bauchtal           T.Fifield 10/28/96	GEOLOGY/MINERALS: No known geology, mineral, karst or cave resource concerns.           LANDS:           CULTURAL: The unit lies in a low sensitivity zone for cultural resources. There are no concerns with the unit, as planned.           VISUALS:
G.Lawton 12/97	PRESCRIPTION: <u>Clear-cut w/ reserves</u> ; retain 10 - 20% of cutting unit, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use type C clear-cut. Minimum of partial suspension. Full suspension required for slopes over 75% below cliff middle of unit. Deleted 3 acres low volume west of G & W stream west end of unit. Deleted steep cliffs along backline. Too isolated for PCT.



# Chasino Study Area Interim Layout NOI Unit 682-302 Alt 3

Mapscale 1:7920 (8 inch to Mile)



- |  |                       |  |                            |  |                                      |  |                    |
|--|-----------------------|--|----------------------------|--|--------------------------------------|--|--------------------|
|  | Class 1 Stream        |  | Saltwater                  |  | No Cut Stream Buffers                |  | Proposed Landings  |
|  | Class 2 Stream        |  | Fresh Water Lake           |  | Variable Width No Cut Stream Buffers |  | Existing Temp Road |
|  | Class 3 Stream        |  | 1000' No Cut Beach Buffers |  | Variable Width No Cut Karst Buffers  |  | Proposed Temp Road |
|  | Class 4 Stream        |  | No Cut Lake Buffers        |  | Alternative To Clearcutting Units    |  |                    |
|  | Existing Roads        |  | Partial Cut Lake Buffers   |  |                                      |  |                    |
|  | Proposed Roads        |  |                            |  |                                      |  |                    |
|  | Unit Boundary         |  |                            |  |                                      |  |                    |
|  | Susp/Yarding Boundary |  |                            |  |                                      |  |                    |







# **Appendix 3**

## **Road Cards**





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11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160986** M.P. 0.00 to M.P.0.35

Sale/Offering Area ROD Road #(s)

**NEW** Construction (New or RE) Planned Length 0.35 Actual Length

Unit(s) accessed **678-312**

Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage **X** Eliminate Prohibit

This road system is not connected to any public road system.

Closure Devices: Barrier,

Erosion Control: water bar

**AFRPR** Closure Status: Active during sale activities. Closed status after initial entry.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED: No Concerns**

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Class III streams may require timing depending on final road location, proximity to fish habitat, bank stability and transport capabilities. Timing and passage requirements will be determined by district biologist after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 0 CLASS II 1 CLASS III 0 CLASS IV

**AS LOCATED STREAM CROSSINGS:**    CLASS I    CLASS II    CLASS III    CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS: NONE**

**SOILS/WATER/WETLANDS RECON/PLANNED:** Road location will avoid wetlands whenever possible. Road location on wetlands to be kept to a minimum and only where no other practical alternative is available. No endhaul material to be placed on wetland areas.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's; 14.2-14.3, 14.5-14.14

**WILDLIFE RECON/PLANNED:** Planned road location is within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED: No Concerns**

**AS LOCATED:**

**CULTURAL RECON/PLANNED: No Concerns**

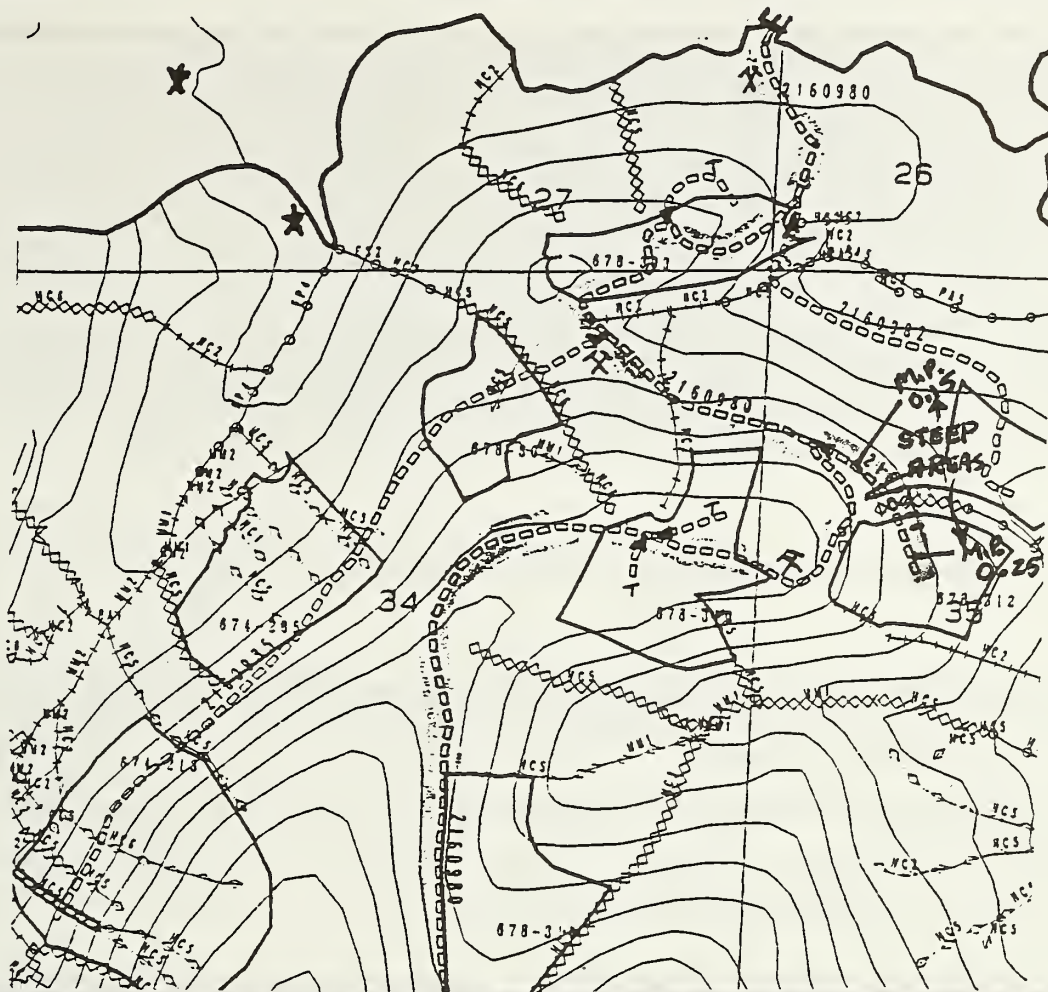
**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** Karst development within unit, road construction should minimize clearing limits and disturbance during construction. road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be reviewed by both Forest Geologist and District Fisheries staff. .

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI activities in 20-25 yrs. Less than 1 mile accessibility, no planting anticipated..

**AS LOCATED:**



- X Rock Quarry  
 -0-0-0- Class I Stream  
 -1-1-1- Class II Stream  
 ◇◇◇◇ Class III Streams  
 ◇-◇-◇-◇ CLASS IV Streams  
 T Temporary road  
 \* Eagle Nest Site

- Existing Roads  
 Construction  
 Reconstruction  
 Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

Road flagged in white and portions in blue polkadot flagging. There are Karst concerns in the area but these can be avoided in final location by working with logging systems and karst resource personnel (See Baichtal report). One Class III stream crossed. Road grades are adverse with pitches to 15%, location should roll to take advantage of topog breaks in order keep construction effects to a minimum. Road construction should be moderate to easy depending on final road location to accomodate logging systems. Side slope gradients exceed 67% in some areas m.p. 0.15 to m.p. 0.25, BMP 14.7 applies. Full bench and endhaul where appropriate to protect resources.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



1/10/96

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name Chasina Road No. 2160985 M.P. 0.00 to M.P. 1.50

Sale/Offering Area ROD Road #(s)

NEW Construction (New or RE) Planned Length 1.5 Actual Length

Unit(s) accessed 674-213,265,678-301

Road Locator: Oien

**Road Management Objectives:**

Funct Class L Traffic Service Level D Hgw. Safety Act No Design Veh: LT

Critical Veh: LB Maint Level: Active Sale 2 Post Sale 1

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate X Prohibit

This road system is not connected to any public or community road system

Closure Devices: Barrier,

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities Closed status after initial entry, m.p. 0.3 to end.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Moderate opportunity for salvage & future settings on first .25 miles of road.

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Timing on class III streams may be required depending on final road location, proximity to fish habitat, bank stability and transport capabilities. Timing requirements will be determined after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 0 CLASS II 2 CLASS III 5 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER/WETLANDS RECON/PLANNED:** Road location will avoid wetlands whenever possible. Road location on wetlands to be kept to a minimum and only where no other practical alternative is available. No endhaul material to be placed on wetland areas.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22.

**WILDLIFE RECON/PLANNED:** Road location may be within 1/2 mile of known bald eagle nest sites. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

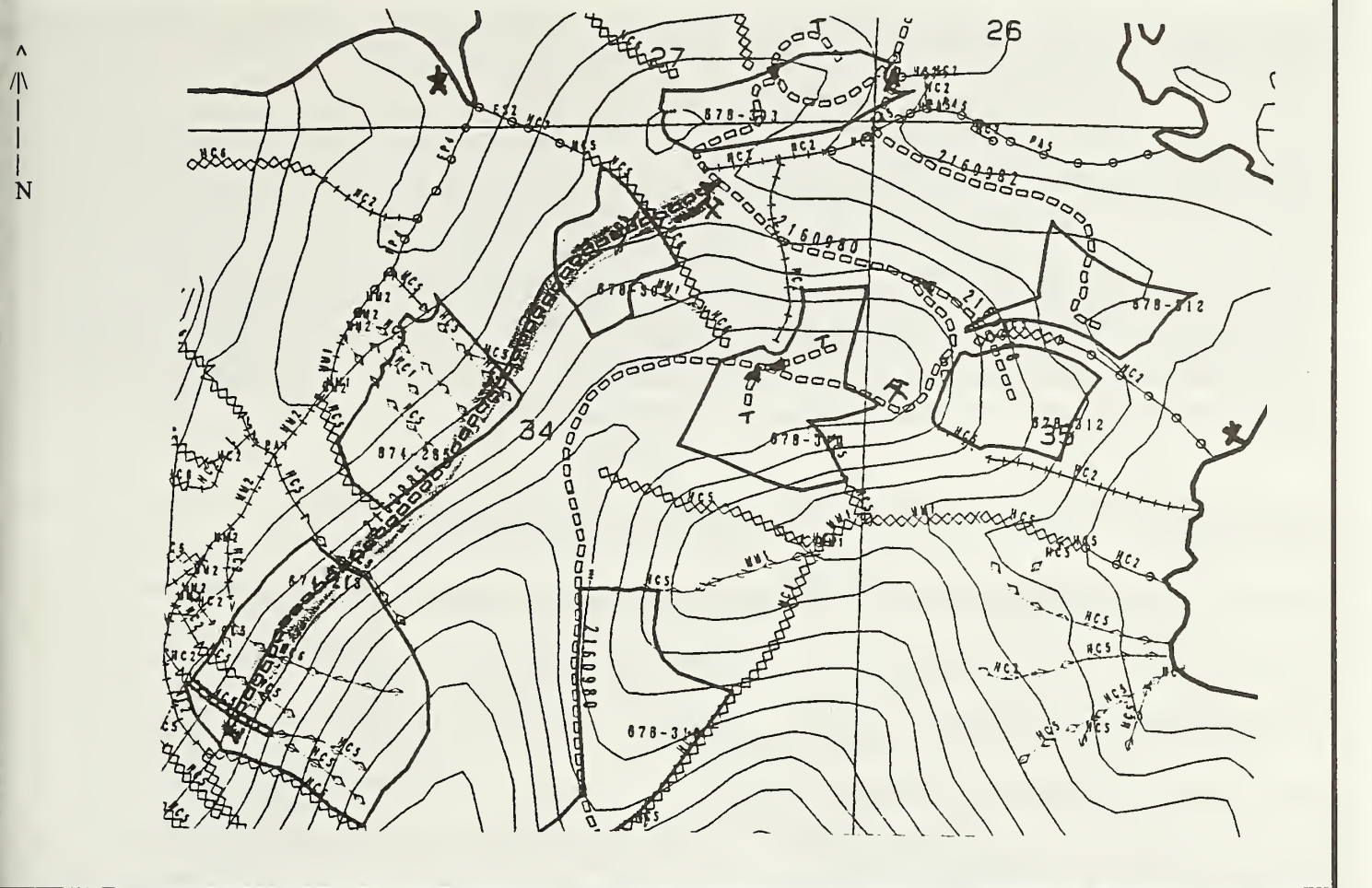
**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** Karst development within unit, road construction should minimize clearing limits and disturbance during construction. road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be reviewed by both Forest Geologist and District Fisheries staff.

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI activities in 15-25 years. Less than 1 mile access, no anticipated planting.

**AS LOCATED:**



X

Rock Quarry

-0-0-0-

CLASS I Streams

-1-1-1-

CLASS II Streams

◇◇◇◇

CLASS III Streams

◇◇◇◇

CLASS IV Streams

T

Temporary road

\*

Eagle Nest Site

Existing Roads

□ □ □ □

Construction

Reconstruction

Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
Road flagged in white and portions in blue polka dot flagging. There are Karst concerns in the area but these can be avoided in final location by working with logging system and karst resource personnel(See Baichtal report). No CLASS I streams crossed, No Class II streams crossed. Class III and IV streams may require cmps up to 900mm diameter, oversizing these cmps may be adviseable depending on whether culverts will be in for more than one season. All drainage structures to be removed after silvicultural activities are complete. Road grades should roll to take advantage of breaks in topog. Construction difficulty is moderate to easy as long as road stays on the lower slopes.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160915** M.P. **0.00** to M.P. **0.60**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **0.60** Actual Length  
Unit(s) accessed **679-409** Road Locator: **Oien**

**Road Management Objectives:**

Function Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate Prohibit **X**

This road system is not connected to any public road system.

Closure Devices: Barrier,

Erosion Control: water bar

**AFRPR Closure status:** Active during sale activities. Closed status after initial entry.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** No concerns

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 0 CLASS II 0 CLASS III 0 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** No areas of wetland identified on this road location.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** Coordinate final road locations to avoid sensitive plant species where feasible. *Platanthera Chorisiana* were found in the vicinity of units 407 & 414.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

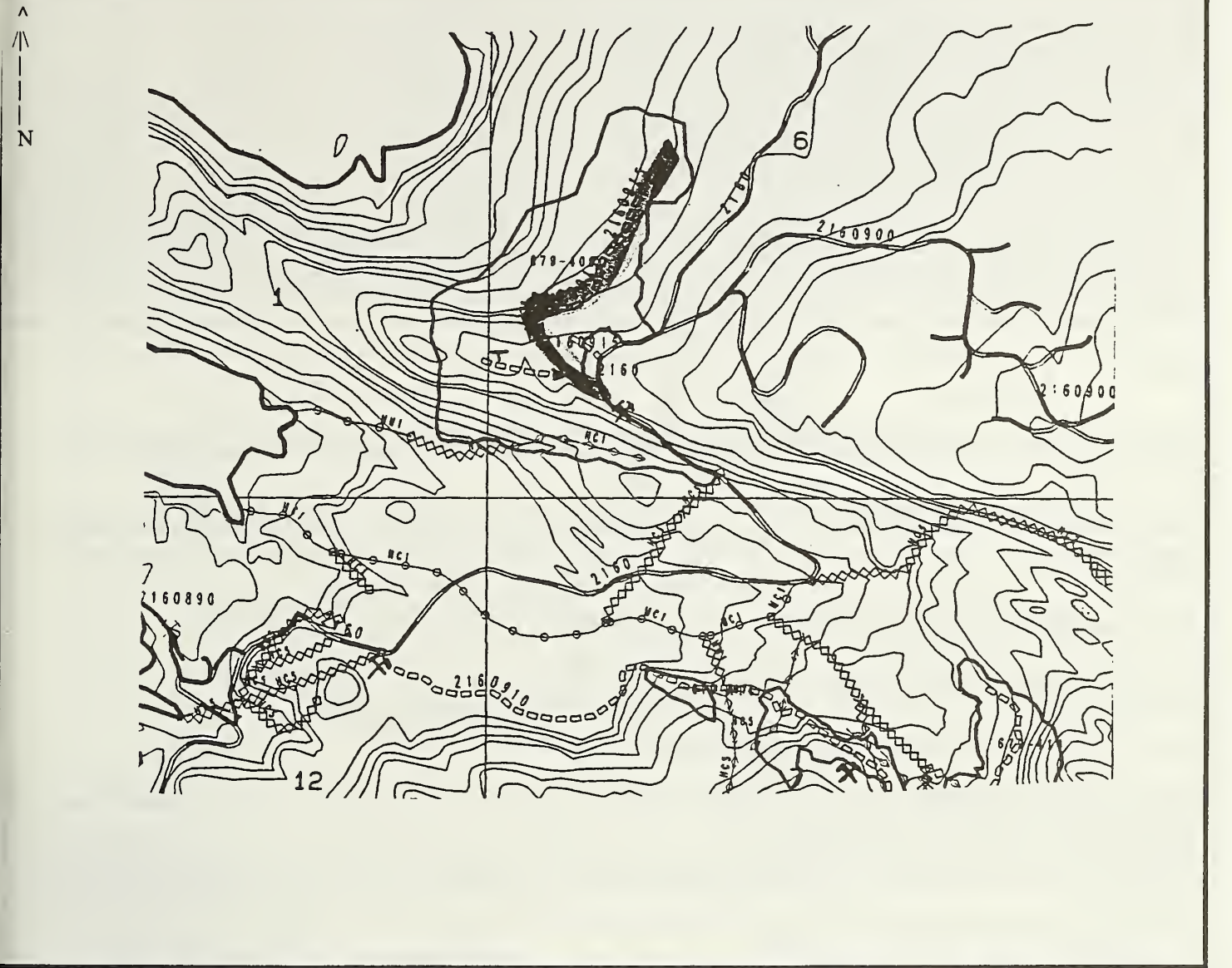
**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** Karst development within unit, road construction should minimize clearing limits and disturbance during construction. road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be reviewed by both Forest Geologist and District Fisheries staff..

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** Foot access sufficient for future TSI and planting.

**AS LOCATED:**





- |         |                   |  |                |
|---------|-------------------|--|----------------|
| X       | Rock Quarry       |  | Existing Roads |
| -0-0-0- | CLASS I Streams   |  | Construction   |
| -I-I-I- | CLASS II Streams  |  | Reconstruction |
|         | CLASS III Streams |  | Harvest unit   |
|         | CLASS IV Streams  |  |                |
| T       | Temporary roads   |  |                |

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
Road accessing unit 409 can be located as planned. No major drainages or fisheries concerns. High percentage of rock in the excavation, easy to moderate construction over most of the location. Grades roll but are mostly adverse with a few pitches to 15%.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map .

11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160920** M.P. **0.00** to M.P. **2.0**

Sale/Offering Area ROD Road #(s)

NEW Construction (New or RE) Planned Length **2.0** Actual Length

Unit(s) accessed **679-403,392,386,384,383,680-317**

Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LT** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate **X** Prohibit

This road system is not connected to any public road system.

Closure Devices: Barrier,

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities. Closed status after initial entry and completion of other silvicultural activities.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Low salvage potential along this road system.  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Some Class III streams may require timing depending on final road locations. Timing and passage to be determined by District Biologist after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 0 CLASS II 2 CLASS III 4 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Forested wetlands are unavoidable along this location. Minimize road width and maintain natural drainage to extent possible.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** No Concerns

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

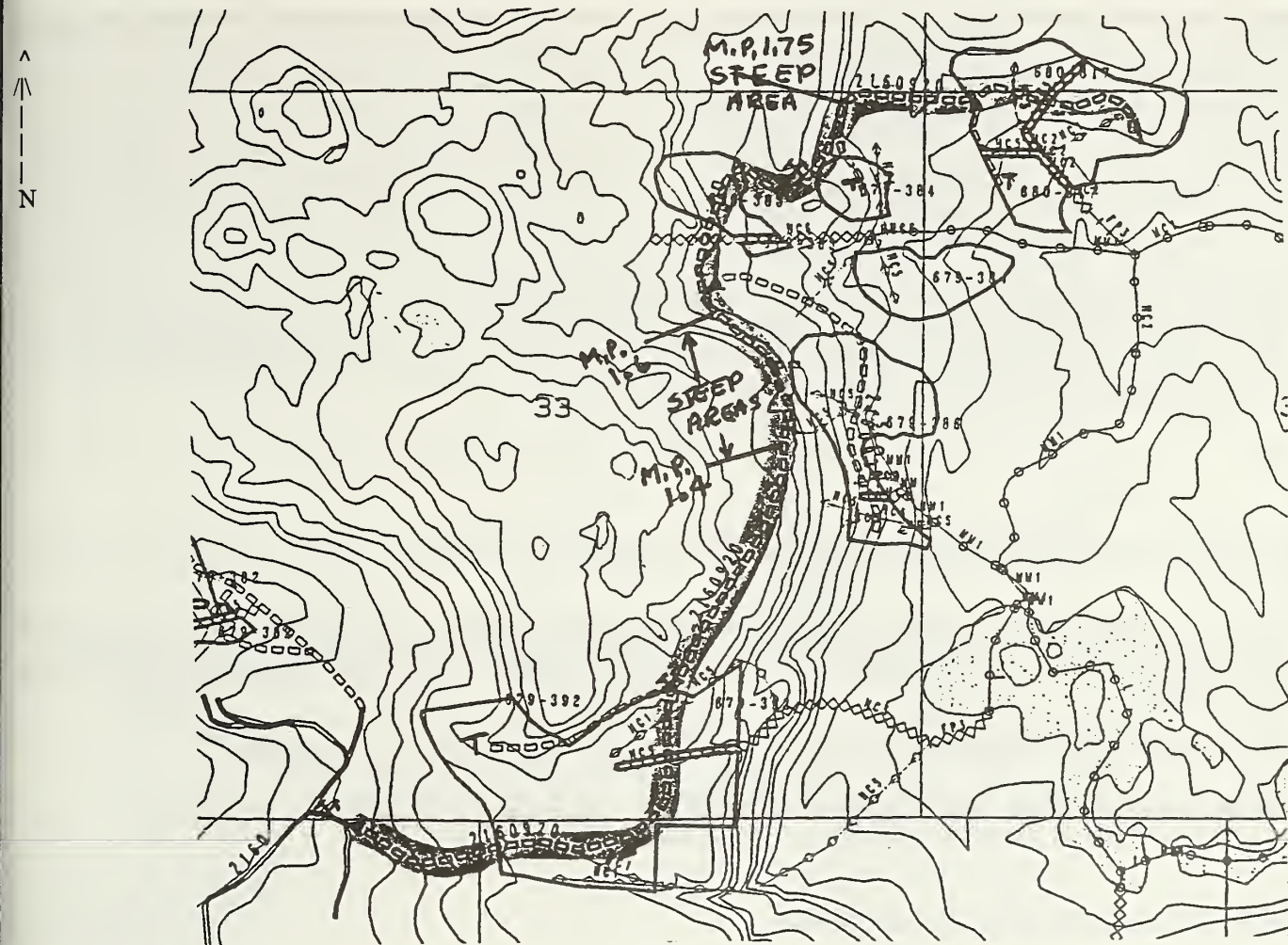
**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** Karst development within unit, road construction should minimize clearing limits and disturbance during construction. road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be reviewed by both Forest Geologist and District Fisheries staff.

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI activities in 15-25 yrs. 3/4 mile access to planned planting TSI access > 1 mile.

**AS LOCATED:**





- X Rock Quarry
- 0-0-0- CLASS I Streams
- I-I-I- CLASS II Streams
- ◇◇◇◇ CLASS III Streams
- ◇◇◇◇ CLASS IV Streams
- T Temporary roads
- Existing Roads
- Construction
- Reconstruction
- Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
Road access the top of unit 386 for logging, this should eliminate the need for a road in the bottom of the unit, logging systems need to verify prior to final location. Final location of this road, if coordinated well with logging systems and other resources should eliminate the need for lower roads with some adjustment to the unit configuration. Most construction will be easy with some sections of difficult construction due to full bench areas and rock outcrops. Grades roll with the topography, overall are adverse with some pitches to 15%. Stream crossings will not require 1200mm dia. or greater cmp unless streams are reclassified to require passage, cmps may want to be oversized to 1200mm to accomodate the passage requirements. Side slope gradients exceed 67% in areas m.p. 1.4 to m.p.1.6 and m.p.1.75, BMP 14.7 applies. Full bench and endhaul where appropriate to protect resources.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160928** M.P. **0.00** to M.P. **0.60**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **0.60** Actual Length  
Unit(s) accessed **679-386** Road Locator: **Oien**

**Road Management Objectives:**

Funcnt Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LT** Maint Level: **Active Sale 2** Post Sale **1**

Intended Purpose and Use: **silvicultural purposes**

Management Strategy: **Encourage Accept Discourage Eliminate X Prohibit**

This road system is not connected to any public road system.

Closure Devices: **Barrier,**

Erosion Control: **water bar**

AFRPR Closure Status: **Active during sale activities. Closed status after initial entry.**

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Some Class IV streams may require timing depending on final road locations and vicinity of class II or I streams. Timing to be determined by District Biologist after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS: 0 CLASS I 0 CLASS II 0 CLASS III 4 CLASS IV**

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV  
**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Forested wetlands are unavoidable along this location. Minimize road width and maintain natural drainage to extent possible.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** No Concerns

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

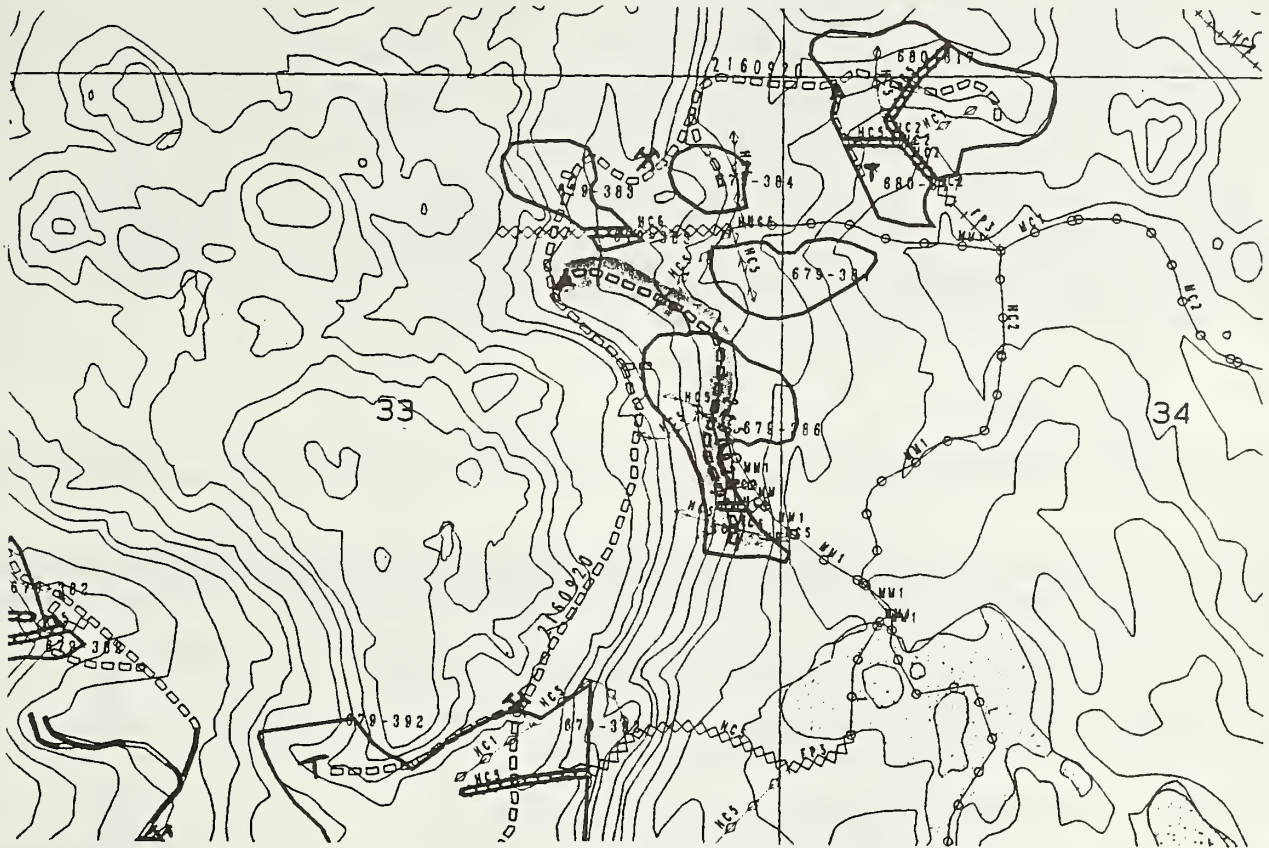
**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No concerns







**AS LOCATED:**





**SILVICULTURE: RECON/PLANNED:** TSI activities in 25+ years. Short access

**AS LOCATED:**

AIN



 Rock Quarry  
 CLASS I Streams  
 CLASS II Streams  
 CLASS III Streams  
 CLASS IV Streams  
 Temporary roads

	<b>Existing Roads</b>
	<b>Construction</b>
	<b>Reconstruction</b>
	<b>Harvest unit</b>

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

Road access the top of unit 386 for logging, road 2160920, this should eliminate the need for this road in the bottom of the unit, logging systems need to verify prior to final location. Most construction will be easy with some sections of difficult construction due to full bench areas and rock outcrops. Grades roll with the topography, overall are adverse with some pitches to 15%. Stream crossing will not require 1200mm dia. or greater cmp unless streams are reclassified to require passage.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160850** M.P. **0.00** to M.P. **3.1**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **3.1** Actual Length  
Unit(s) accessed **681-304,680-,330** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No. Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **I**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate **X** Prohibit **X**

This road system is not connected to any public or community road system.

Closure Devices: Barrier,

Erosion Control: water bars a maximum of 500ft. spacing on level 1 roads.

AFRPR Closure Status: Active during sale activities. Inactive m.p. 0.00 to m.p. 1.9, closed m.p. 1.9 to m.p. 3.1.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Moderate salvage potential along this road system.  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Final road location should minimize impacts to TTRA buffers. Timing and passage on Class I & II streams. Timing on Class III streams will be determined after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS:** 4 CLASS I 0 CLASS II 2 CLASS III 5 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Forested wetlands are unavoidable along this location. Minimize road width and maintain natural drainage to extent possible.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5--14.14

**WILDLIFE RECON/PLANNED:** Road location is within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No Concerns

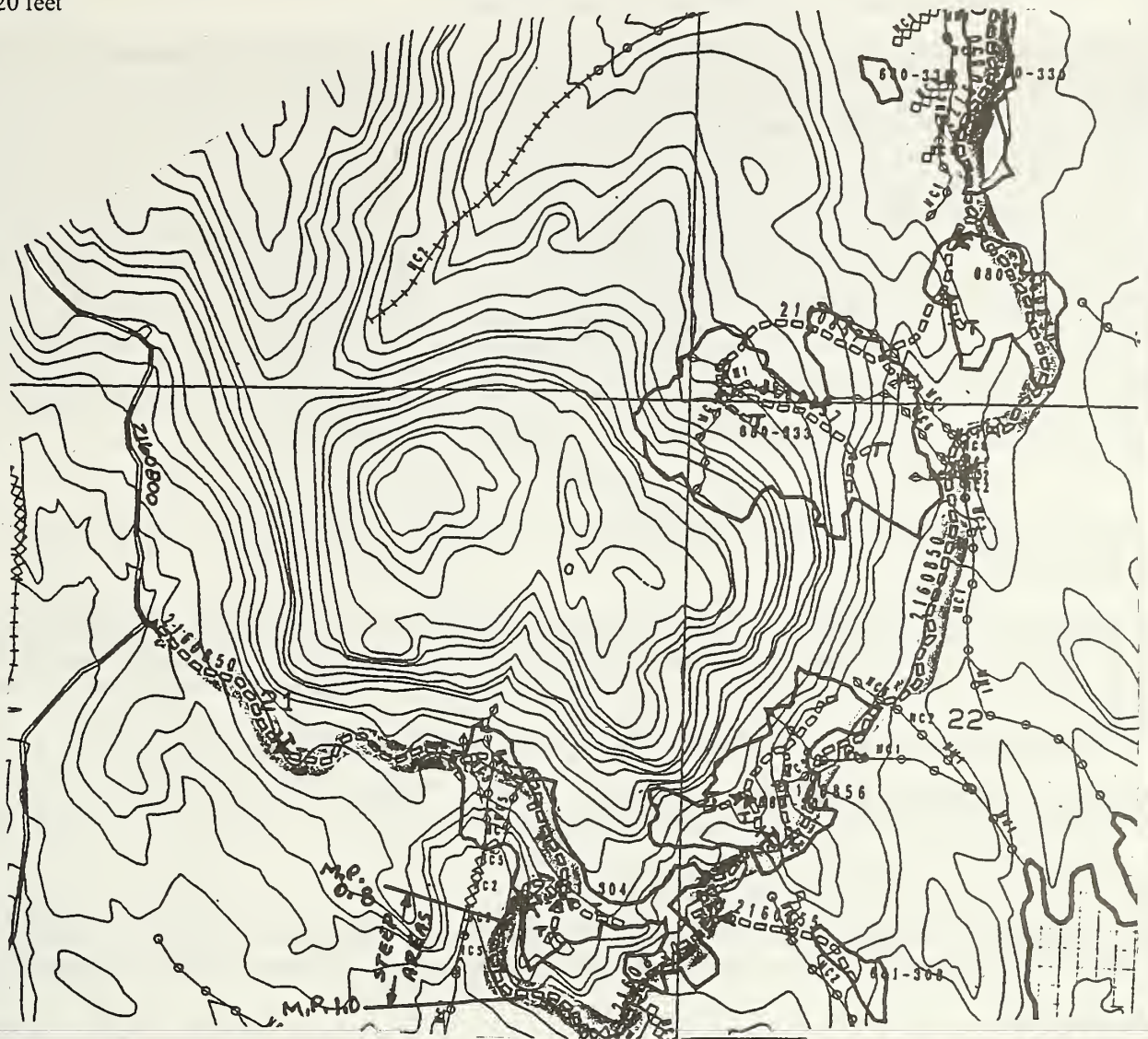
**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** Maintain access to m.p. 1.9, for future TSI in 25 years and planting within 5 yrs. in unit 680-330.

**AS LOCATED:**



SCALE: 1" = 1320 feet



X Rock Quarry

--0--0--0-- CLASS I Streams

--I--I--I-- CLASS II Streams

◇◇◇◇◇ CLASS III Streams

◇◇◇◇◇ CLASS IV Streams

T Temporary roads



Existing Roads



Construction



Reconstruction



Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

CLASS I crossings will require 1200mm or larger cmp. Crossings at M.P. 1.9 and beyond may be installed as temporary bridges to facilitate removal and road closure at completion of post sale activities. Class I streams are 6-10 percent gradient, all less than 1.2 meters wide, recommend oversizing cmps to accomodate burying pipe in stream bed for passage. Use temp bridge crossings where ever possible to facilitate removal and road closure at a later time if road management dictates. Road grades roll to fit topography not exceeding 15% adverse pitches. Most construction is easy to moderate with one section 100 meters long of full bench rock. Side slope gradients exceed 67% in some areas m.p. 0.8 to m.p. 1.0, BMP 14.7 applies. Full bench and endhaul where appropriate to protect resources.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160855** M.P. **0.00** to M.P. **0.30**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **0.30** Actual Length  
Unit(s) accessed **681-308** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate **X** Prohibit

This road system is not connected to any public or community road system.

Closure Devices: Barrier,

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities. Closed status after initial entry.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Road locations should minimize impacts to TTRA buffers. Timing and passage required on Class I streams. Timing will be determined after final location is complete. GIS mapping shows a CLASS I stream crossing, field recon has determined this to be a CLASS II O/W stream and is flagged so on the ground.

**RECON/PLANNED STREAM CROSSINGS: 1 CLASS I 0 CLASS II 0 CLASS III 0 CLASS IV**

**AS LOCATED STREAM CROSSINGS: CLASS I CLASS II CLASS III CLASS IV**

**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Wetlands are unavoidable on this road location, location on wetlands are to be kept at a minimum and only where no other practical alternative is available. No endhaul material to be placed on wetland areas.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** Road construction within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED: No Concerns**

**AS LOCATED:**

**CULTURAL RECON/PLANNED: No Concerns**

**AS LOCATED:**

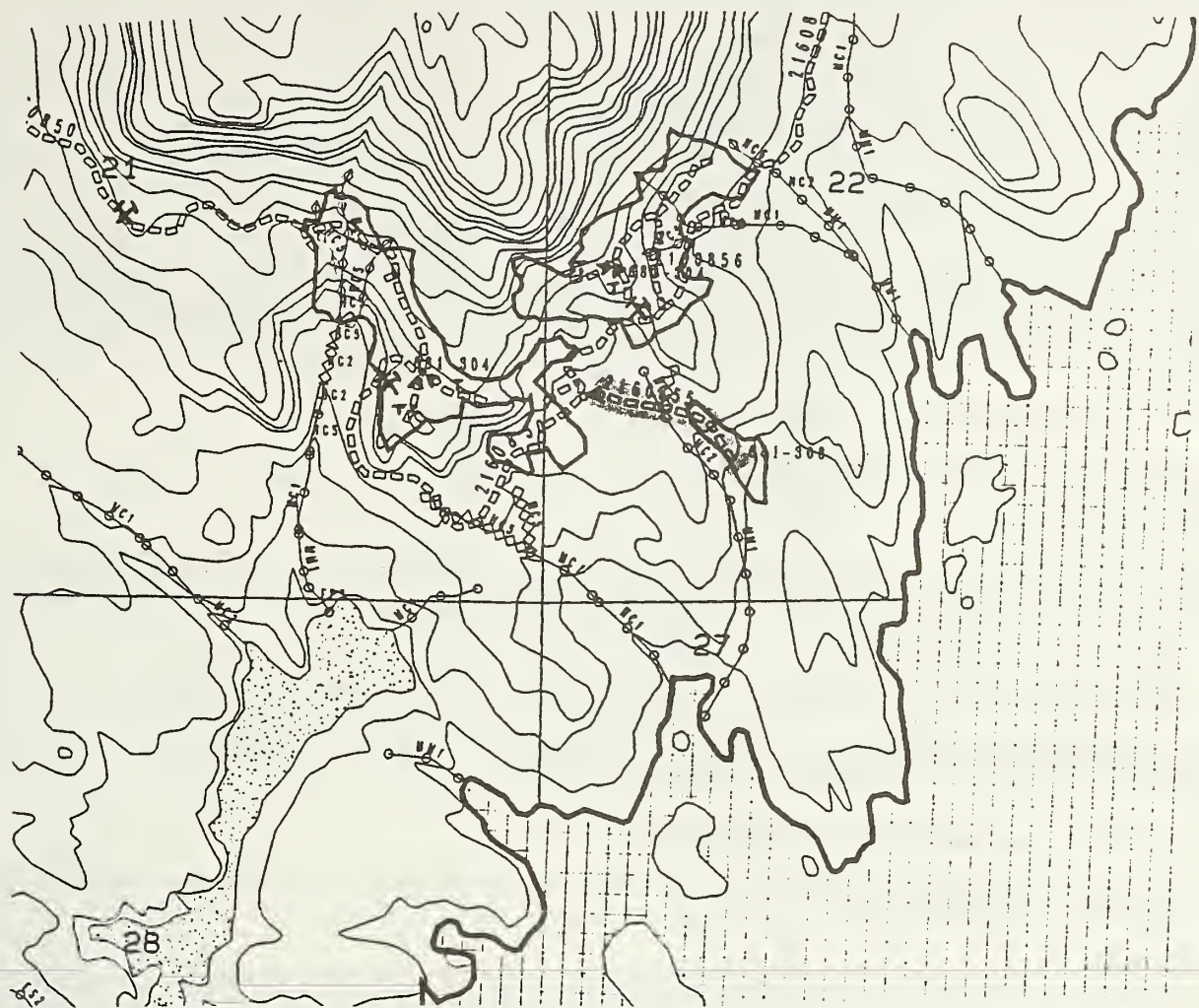
**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED: No Concerns**

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI in 25 years. No planting planned, 1/4 mile access.

**AS LOCATED:**

^  
 / \  
 N



- |            |                   |  |                |
|------------|-------------------|--|----------------|
| X          | Rock Quarry       |  | Existing Roads |
| -0--0--0-- | CLASS I Streams   |  | Construction   |
| -I--I--I-- | CLASS II Streams  |  | Reconstruction |
| ◇◇◇◇◇      | CLASS III Streams |  | Harvest unit   |
| ◇--◇--◇--  | CLASS IV Streams  |  |                |
| T          | Temporary roads   |  |                |

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
 Road will access no other resources in the area so elimination of access is appropriate. Recommend all roads be built to minimum standards and temp roads be used whenever possible. Stream crossing will be with cmp less that 1200 mm dia.or use of tempoary crossing structure. CMP on the Class I stream(flagged as Class II O/W) will have +/- 3m fill. road grades are 10-15% adverse, easy road construction, no full bench.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160856** M.P. **0.00** to M.P. **0.23**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **0.23** Actual Length  
Unit(s) accessed **680-304** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate **X** Prohibit

This road system is not connected to any public or community road system.

Closure Devices: Barrier,

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities. Closed status after initial entry.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Road locations should minimize impacts to TTRA buffers. Timing and passage required on Class IV streams depending on vicinity to Class I streams. Timing will be determined after final location is complete.

**RECON/PLANNED STREAM CROSSINGS:** CLASS I **0** CLASS II **0** CLASS III **2** CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER RECON/PLANNED:**

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** Road construction within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED: No Concerns**

**AS LOCATED:**

**CULTURAL RECON/PLANNED: No Concerns**

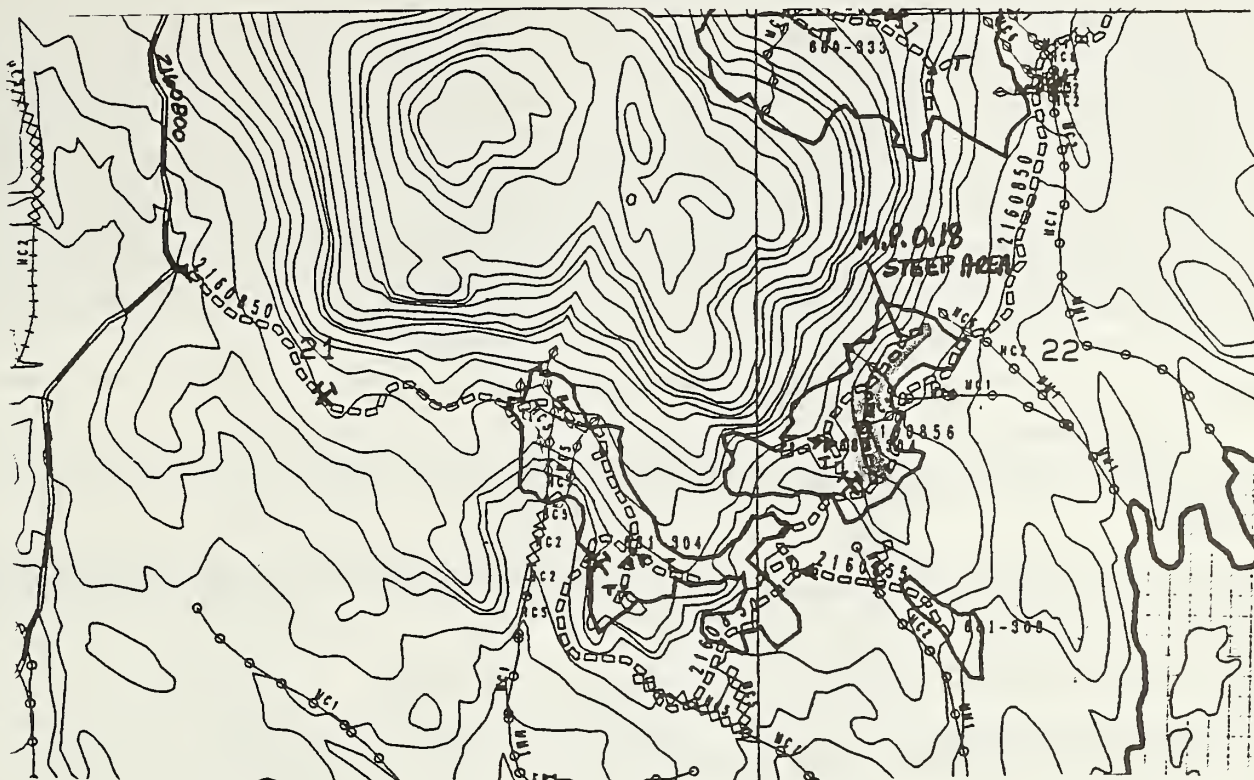
**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED: No Concerns**

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI in 25 years. No planting planned, short access.

**AS LOCATED:**



- |  |                   |   |                |
|--|-------------------|---|----------------|
|  | Rock Quarry       |  | Existing Roads |
|  | CLASS I Streams   |  | Construction   |
|  | CLASS II Streams  |  | Reconstruction |
|  | CLASS III Streams |  | Harvest unit   |
|  | CLASS IV Streams  |   |                |
|  | Temporary roads   |   |                |

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

Road will access no other resources in the area so elimination of access is appropriate. Recommend all roads be built to minimum standards and temp roads be used whenever possible. Road location utilizes benches on the ground whenever possible, may be some full bench construction in steep areas between benches. Road grades favorable to 15%. Culvert installations should be low impact, crossdrains on CLASS IV streams. Use temp crossings whenever possible to facilitate removal and road closure. Side slope gradients exceed 67% in some areas m.p. 0.18 to m.p. 0.20, BMP 14.7 applies. Full bench and endhaul where appropriate to protect resources.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160857** M.P. **0.00** to M.P. **0.80**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **0.8** Actual Length  
Unit(s) accessed **680-333** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate **X** Prohibit

This road system is not connected to any public or community road system.

Closure Devices: Barrier,

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities. Closed status after initial entry.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Timing may be required on class IV streams and will be determined after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS: 0 CLASS I 0 CLASS II 0 CLASS III 2 CLASS IV**

**AS LOCATED STREAM CROSSINGS: CLASS I CLASS II CLASS III CLASS IV**

**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Forested wetlands are unavoidable along this location. Minimize road width and maintain natural drainage to extent possible.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14

**WILDLIFE RECON/PLANNED:** Road location within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED: No Concerns**

**AS LOCATED:**

**CULTURAL RECON/PLANNED: No Concerns**

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED: No Concerns**

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED: TSI in 20-25 years. No planting planned, less than 1 mile access.**

**AS LOCATED:**



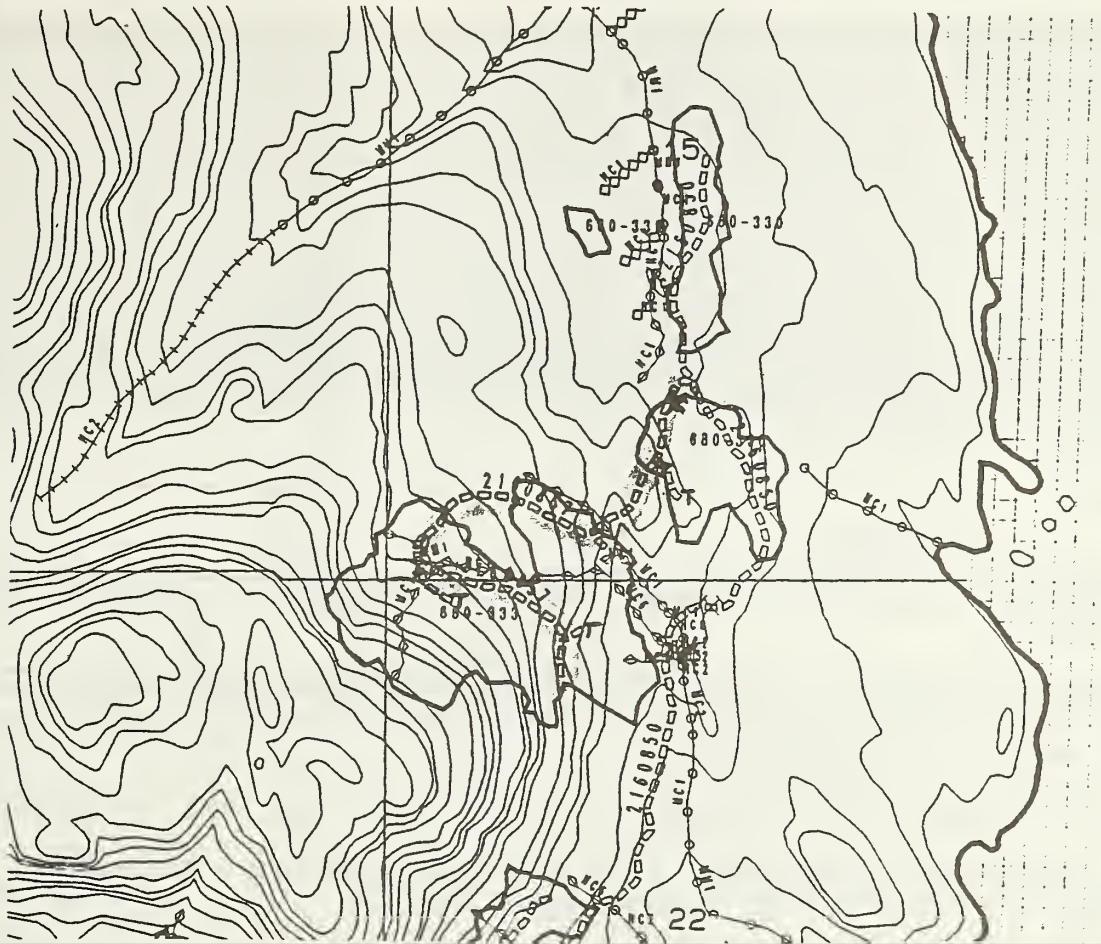
Road #2160857 Map #: CRG A-1  
 SCALE: 1" = 1320 feet

Aerial Photo: Yr. 91

Line

Photo # 390-218,219

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 N



X Rock Quarry  
 -0--0--0-- CLASS I Streams  
 -I--I--I-- CLASS II Streams  
 <--<--<-- CLASS III Streams  
 <--<--<-- CLASS IV Streams  
 T Temporary roads

Existing Roads  
 Construction  
 Reconstruction  
 Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

Road will access no other resources in the area so elimination of access is appropriate. Recommend all roads be built to minimum standards and temp roads be used whenever possible. No major drainages crossed, CLASS IV streams will require small 600mm dia. cmps. Road grades are favorable to 15%. Road construction easy to moderate, no significant full bench construction required.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns.

11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160890** M.P. 0.00 to M.P.0.25

Sale/Offering Area ROD Road #(s)

RE Construction (New or RE) Planned Length 0.25 Actual Length

Unit(s) accessed LTF Road Locator: Oien

**Road Management Objectives:**

Function Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage **X** Eliminate Prohibit

This road system does not connect to any public road system

Closure Devices: Barrier,

Erosion Control: Maintain road and monitor all maintenance activities.

AFRPR Closure Status: Active during sale activities

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Access to LTF for all salvage and small sales.  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Timing may be required on class III streams depending on final road location. Timing determination will be made after final road location is complete. One Class III stream indicated below is an existing culvert.

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 0 CLASS II 1 CLASS III 0 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** No concerns

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.14

**WILDLIFE RECON/PLANNED:** Road may be within 1/2 mile of known bald eagle nesting site, follow interagency agreement with USFWS during construction.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No Concerns

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** Maintain access for future TSI and planting in 15-25 years. Planting anticipated within 5 yrs. at end of road > 1.5 miles.

**AS LOCATED:**



Road #2160890 Map #: CRG A-1  
 SCALE: 1" = 1320 feet

Aerial Photo: Yr. 91

Line

Photo # 390-163

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 N



- X Rock Quarry
- 0--0--0-- CLASS I Stream
- I--I--I--I-- CLASS II Stream
- ◇◇◇◇ CLASS III Streams
- ◇--◇--◇--◇ CLASS IV Streams
- .T Temporary roads

- Existing Roads
- Construction
- Reconstruction
- Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
 Reconstruction on this road will be minimal. Road access Barge facility(LTF) LTF crib wall will need extensive maintenance. No change in marine footprint. Facility to be accessed for NPDES conformity and any corrections deemed necessary will be made.  
**Planned/Implemented:** (describe changes and rational):  
**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map .



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160982** M.P. **0.00** to M.P. **0.75**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **0.75** Actual Length  
Unit(s) accessed **678-312** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**  
Critical Veh: **LB** Maint Level: **Active Sale 2** Post Sale **1**  
Intended Purpose and Use: **silvicultural purposes**  
Management Strategy: **Encourage Accept Discourage X Eliminate Prohibit**  
This road system is not connected to any public road system.

Closure Devices: **Barrier,**

Erosion Control: **water bar**

AFRPR Closure Status: **Active during sale activities. Close after initial entry.**

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Future settings and salvage opportunities on this road system.

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Class I streams require timing and passage depending on final road location. Some Class III streams may require timing depending on final road location, proximity to fish habitat, bank stability and transport capabilities. Timing and passage requirements will be determined by district biologist after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS:** 1 CLASS I 0 CLASS II 0 CLASS III 0 CLASS IV

**AS LOCATED STREAM CROSSINGS:**    CLASS I    CLASS II    CLASS III    CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:** **NONE**

**SOILS/WATER/WETLANDS RECON/PLANNED:** Road location will avoid wetlands whenever possible. Road location on wetlands to be kept to a minimum and only where no other practical alternative is available. No endhaul material to be placed on wetland areas.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's; 14.2-14.3, 14.5-14.14

**WILDLIFE RECON/PLANNED:** Planned road location is within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** Karst development within unit, road construction should minimize clearing limits and disturbance during construction. road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be reviewed by both Forest Geologist and District Fisheries staff..

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI in 15-25 years, less than 1 mile access from the west. No planting anticipated..

**AS LOCATED:**



X Rock Quarry
-0-0-0- Class I Stream
-1-1-1- Class II Stream
◇◇◇◇ Class III Streams
◇-◇-◇- CLASS IV Streams
T Temporary roads
\* Eagle Nest Site

Existing Roads

Construction

Reconstruction

Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
Road flagged in white and portions in blue polkadot flagging. There are Karst concerns in the area but these can be avoided in final location by working with logging systems and karst resource personnel(See Baichtal report). One Class I stream crossed that will require a 1200mm dia. or greater cmp to accommodate passage requirements.. Road grades will roll with pitches both favorable and adverse to 15% to accomodate ground topog and Karst concerns. Road construction should be moderate to easy with a high percentage of rock excavation.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160800** M.P. **0.00** to M.P. **4.10**  
Sale/Offering Area **ROD Road #(s)**  
**NEW & RE** Construction (New or RE) Planned Length **4.1** Actual Length  
Unit(s) accessed **679-420** and E.Dolomi units Road Locator: **oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No **Design Veh: LT**  
Critical Veh: **LB** Maint Level: **Active Sale 2** Post Sale **1**

Intended Purpose and Use: **silvicultural purposes**

Management Strategy: **Encourage Accept Discourage X Eliminate Prohibit**

This road system is not connected to any public or community road system.

Closure Devices: **Gate**

Erosion Control: **water bar**

AFRPR Closure Status: **Active during sale activities. Active post sale.**

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** High salvage potential along this system.  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** All crossings of streams are existing crossings. Repair to existing culverts will be completed per road condition survey completed by biologists during 1997 field season, survey is located in appendix J of FEIS. Timing requirements will be determined after final road reconstruction package is complete. No streams crossed on new construction(0.10 total new construction)

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 2 CLASS II 4 CLASS III CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER/WETLANDS RECON/PLANNED:** NO CONCERNS, EXISTING ROAD.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** No Concerns

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No Concerns

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI activities in 20-3- years, no planting planned. Maintain for TSI within 5 yrs(existing units)

**AS LOCATED:**

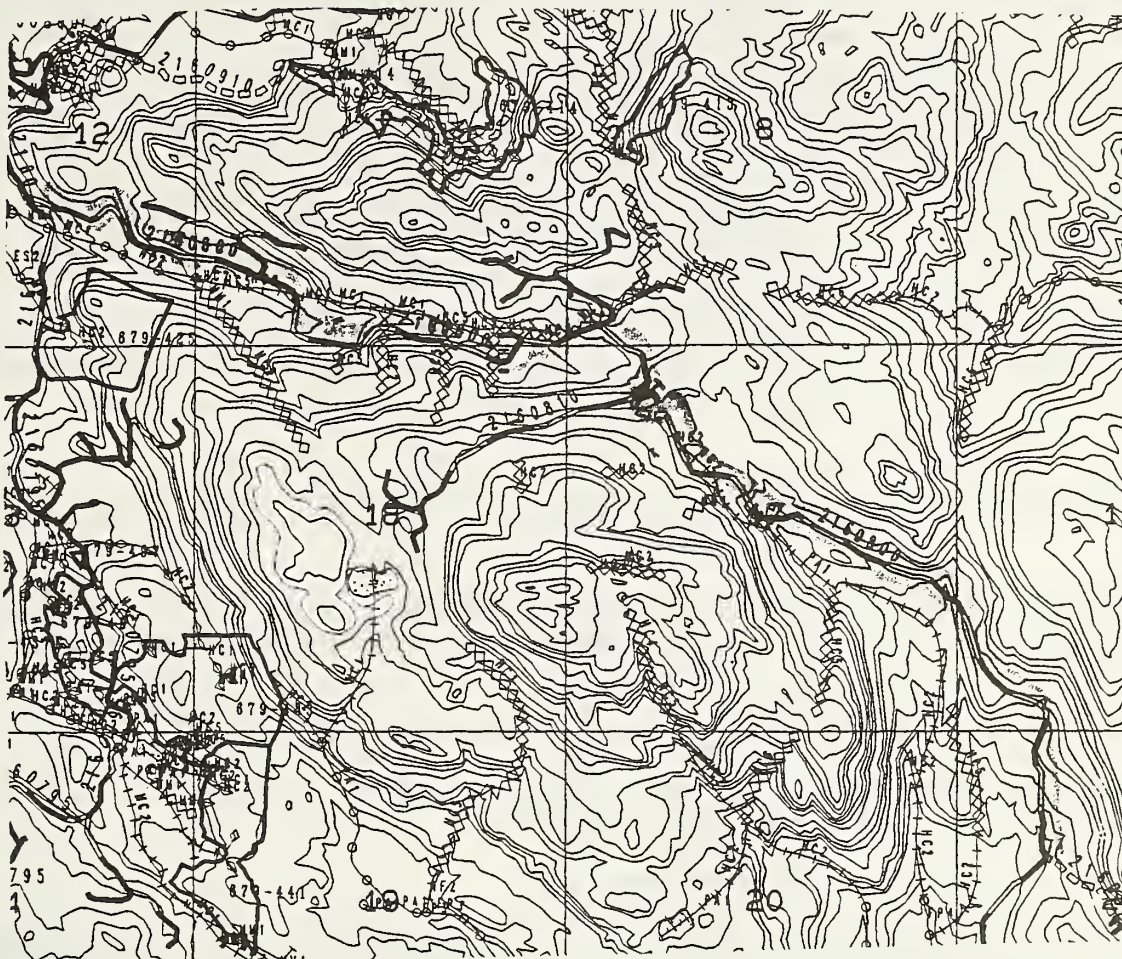
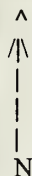


SCALE: 1" = 1320 feet

Aerial Photo: Yr. 91





Line

Photo #


**Rock Quarry**

--0--0--0-- CLASS I Streams

**---I---I---I--- CLASS II Streams**

    CLASS III Streams

◇--◇--◇ CLASS IV Streams

**T Temporary roads**

## Existing Roads



## Construction

## Reconstruction

\_\_\_\_\_

## Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

This section includes a 500ft. section of new construction that ties the FS road system to the Kootznووoo roads. Easement has been obtained from Kootznووoo for use of their roads. No streams encountered on this section. No major(1200mm) cmp's to be installed or replaced on this new section. CMP repairs to be done per 1997 road condition survey.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160980** M.P. **0.00** to M.P. **3.00**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **3.00** Actual Length  
Unit(s) accessed **678-303,310,316,319** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage **X** Eliminate Prohibit

This road system is not connected to any public road system.

Closure Devices: Barrier,

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities. Inactive status after initial entry for other silvicultural activities.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Future settings and salvage opportunities on this road system.

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Class II streams require timing and passage depending on final road location. Timing and passage requirements will be determined by district biologist after final road location is complete.

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 2 CLASS II 0 CLASS III

**AS LOCATED STREAM CROSSINGS:**    CLASS I    CLASS II    CLASS III

**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:** NONE

**SOILS/WATER/WETLANDS RECON/PLANNED:** Road location will avoid wetlands whenever possible. Road location on wetlands to be kept to a minimum and only where no other practical alternative is available. No endhaul material to be placed on wetland areas.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's; 14.2-14.3, 14.5-14.14

**WILDLIFE RECON/PLANNED:** Planned road location is within 1/2 mile of known bald eagle nesting site. Follow interagency agreement with USFWS.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

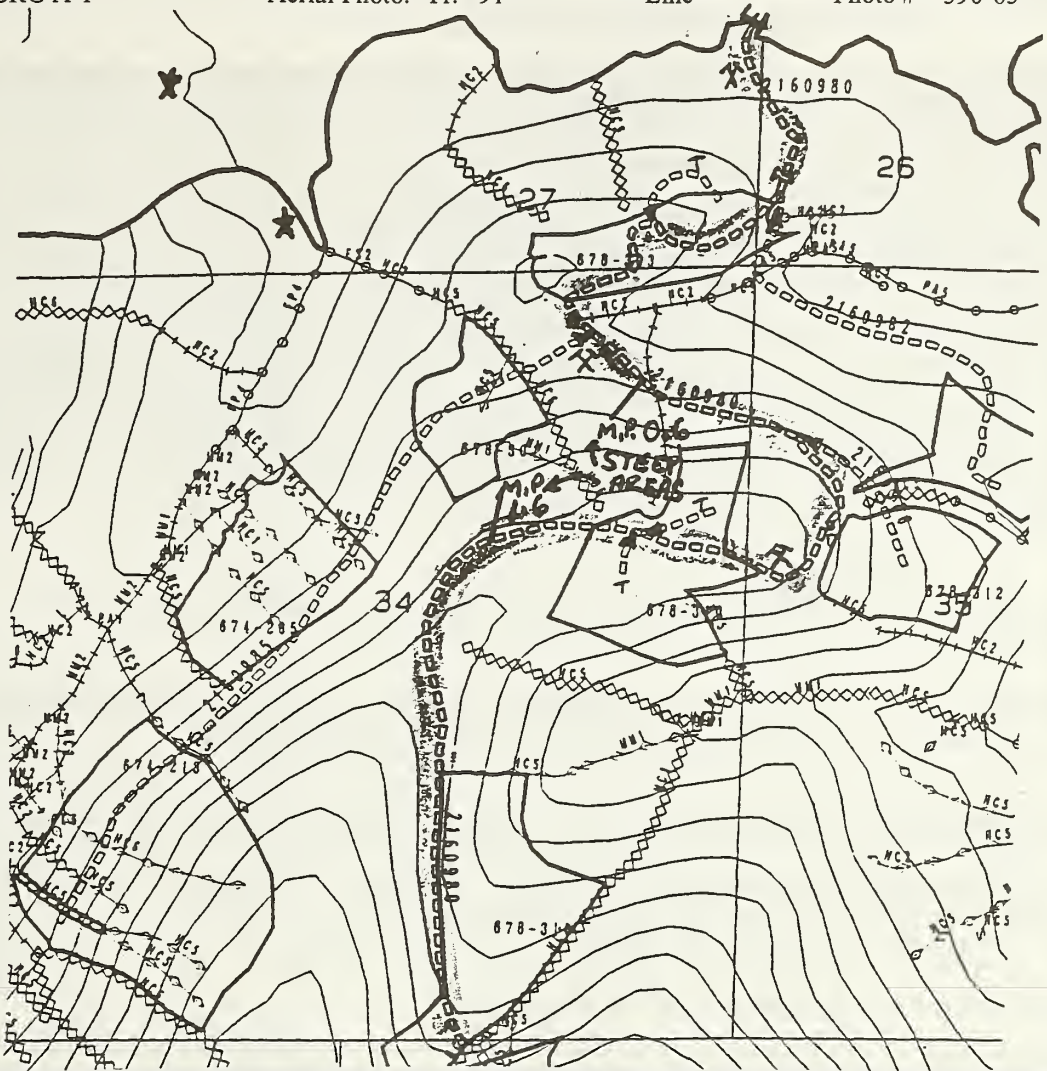
**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** Karst development within unit, road construction should minimize clearing limits and disturbance during construction. road and ditch construction should not direct surface runoff into collapse features and sinkholes adjacent to alignment. Timing of road construction should insure that grass seeding is accomplished so that cut slopes are vegetated before fall. Quarry placement and development should be reviewed by both Forest Geologist and District Fisheries staff.

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** Maintain access for future TSI in 15-25 years. Planting anticipated within 5 yrs at end of road > 1.5 miles.

**AS LOCATED:**



X Rock Quarry

- -0-0-0-0- Class I Stream

---1---1---1--- Class II Stream

### Class III Streams

◇--◇--◇- CLASS IV Streams

### Temporary roads

\* Eagle Nest Site

☐ ☐ ☐ ☐

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## Existing Roads

## Construction

## Reconstruction

### Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

Road flagged in white and portions in blue polkadot flagging. There are Karst concerns in the area but these can be avoided in final location by working with logging systems and karst resource personnel (See Baichtal report) No Class I streams crossed, Class II streams crossed will not require 1200mm dia. or greater cmp. Road grades are favorable to 15% with one section to 19% grade to stay on more moderate ground. Construction will be moderate to difficult in some areas. Full bench construction will be necessary for portions. Side slope gradients exceed 67% in some areas m.p. 0.6 to m.p. 1.6, BMP 14.7 applies. Full bench and endhaul where appropriate to protect resources. Final location to avoid steep sideslopes by utilizing benches where possible.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160910** M.P. **0.00** to M.P. **1.40**  
Sale/Offering Area ROD Road #(s)  
NEW Construction (New or RE) Planned Length **1.40** Actual Length  
Unit(s) accessed **679-414** Road Locator: **Oien**

**Road Management Objectives:**

Funcn Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**  
Critical Veh: **LB** Maint Level: **Active Sale 2** Post Sale **1**

Intended Purpose and Use: **silvicultural purposes**

Management Strategy: **Encourage Accept Discourage Eliminate Prohibit X**  
This road system does not connect to any public road system

Closure Devices: **Barrier,**

Erosion Control: **waterbars a maximum of 500 apart during inactive status.**

AFRPR Closure Status: **Active during sale activities. Closed status after initial entry.**

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Timing may be required on streams crossings depending on final road location and proximity to the class I and II streams.

**RECON/PLANNED STREAM CROSSINGS: 0 CLASS I 0 CLASS II 0 CLASS III 5 CLASS IV**

**AS LOCATED STREAM CROSSINGS: CLASS I CLASS II CLASS III CLASS IV**  
**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER RECON/PLANNED:** Areas of wetlands are unavoidable due to topograph and road grade restrictions. Most practical route chosen when wetlands areas were encountered.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.

**WILDLIFE RECON/PLANNED:** Coordinate final road locations to avoid sensitive plant species where feasible. *Platanthera chorisiana* were found in the vicinity of units 407 & 414. Road may be within 1/2 mile of known bald eagle nesting site, follow interagency agreement with USFWS during construction.

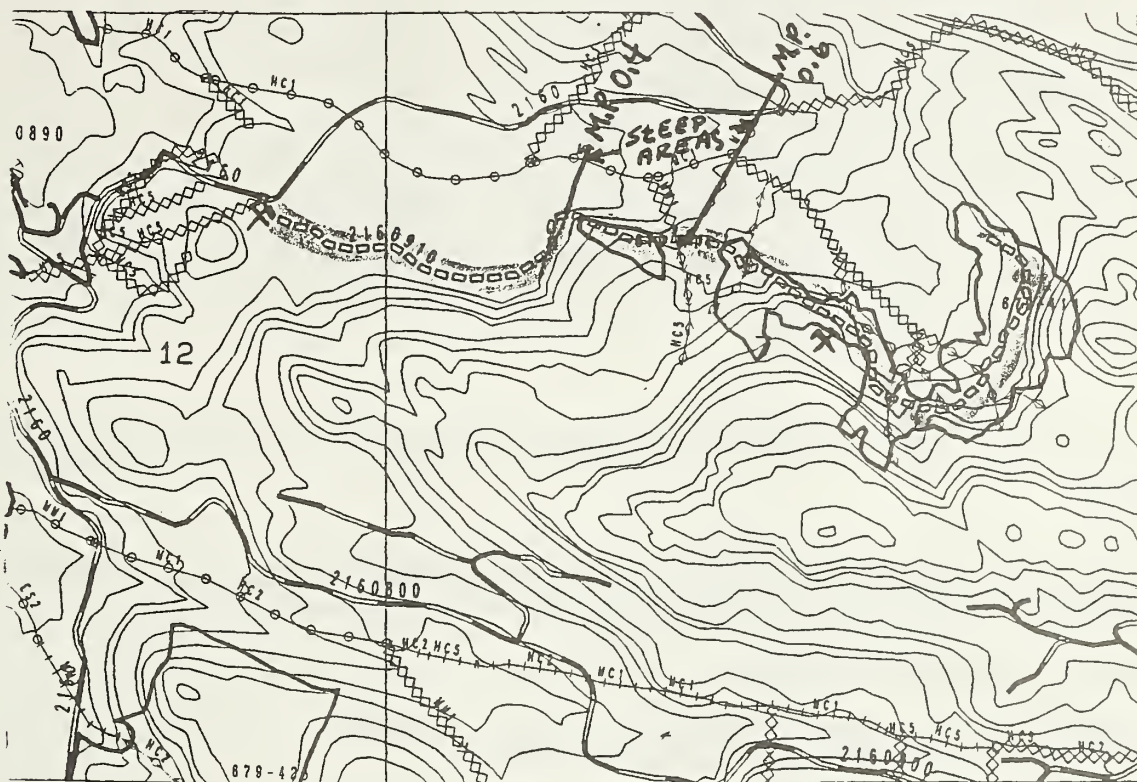
**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**CULTURAL RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED: No Concerns**  
**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED: No concerns. TSI and planting planned, short access.**  
**AS LOCATED:**



### Harvest unit

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map .



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160000(Chasina Pt.)** M.P. **0.00** to M.P. **4.0**  
Sale/Offering Area **ROD Road #(s)**  
NEW Construction (New or RE) Planned Length **4.0** Actual Length  
Unit(s) accessed **679-382,378,367,363,501,680-310** Road Locator: **Oien /Rousso/Wilt**

**Road Management Objectives:**

Function Class **L** Traffic Service Level **D** Hgw. Safety Act No **Design Veh: LT**

Critical Veh: **LB** Maint Level: **Active Sale 2** Post Sale **I**

Intended Purpose and Use: **silvicultural purposes**

Management Strategy: **Encourage Accept Discourage X Eliminate X Prohibit**

This road system is not connected to any public road system.

Closure Devices: **Barrier,**

Erosion Control: **water bars on level 1 roads with no barrier, maximum spacing 500 ft. and over cross drain cmps.**

AFRPR Closure Status: **Active during sale activities. Post sale status will be inactive up to m.p. 2.9 and closed from m.p.2.9 to 4.0 upon completion of all silvicultural activities.**

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Future salvage potential and harvest settings along this road system

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Timing and passage may be required on class II & III streams. Timing and passage requirements to be determined after final road location.

**RECON/PLANNED STREAM CROSSINGS:** 0 CLASS I 1 CLASS II 10 CLASS III 10 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER RECON/PLANNED:** Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22.(Soils and Watershed Conservation Handbook). Specific BMP's; 14.2,14.3,14.5, 14.6-14. Forested wetlands are unavoidable along this location. Minimize road width and maintain natural drainage to extent possible.

**AS LOCATED:**

**WILDLIFE RECON/PLANNED:** Coordinate final road locations to avoid sensitive plant species where feasible, *Platanthera chorisiana* were found in the vicinity of unit 679-363. No known bald eagle nest sites within 1/2 mile of road locations.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No Concerns

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI activities in 20-30 yrs. along most of road. Planting planned along most of road within 5 years., 1 mile accessibility beyond 2.9 mile.

**AS LOCATED:**



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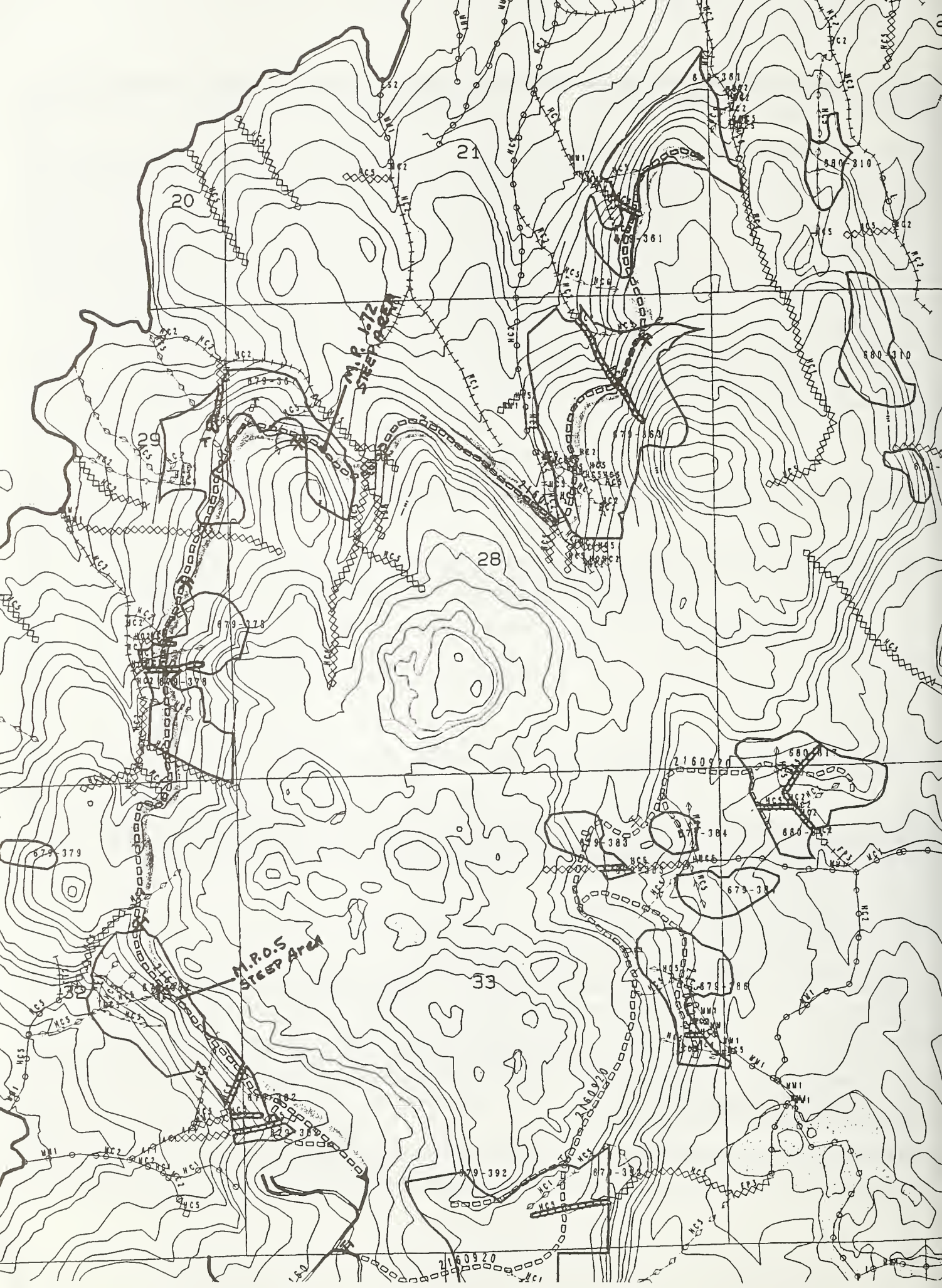
SEE ATTACHED MAP

X	Rock Quarry		Existing Roads
-0---0---0--	CLASS I Streams		Construction
-I---I---I--	CLASS II Streams		Reconstruction
◇◇◇◇◇	CLASS III Streams		Harvest unit
◇---◇---◇	CLASS IV Streams		
T	Temporary roads		

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
Road reconned near planned route, logging systems input required in most units before final location is complete. CLASS II, O/W stream crossing m.p. +/- 2.9 will require 1200mm or greater cmp, timing required(June 1 - Sept. 1). Stream width varies, 1 to 1.5 meters in width, 0.25 m in depth. Gradient at the crossing is 12 percent with steps. Culvert will require 3m deep fill, endhaul excess overburden 60 m each side of crossing. Road grades roll over entire road, are generally favorable, with pitches up to 15%. No critical areas of full bench construction. Side slope gradients exceed 67% in areas m.p.0.50 and m.p.1.72, BMP 14.7 applies. Full bench and endhaul where appropriate to protect resources.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map .



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11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160787** M.P. **0.00** to M.P. **1.00**  
Sale/Offering Area ROD Road #(s)  
RE Construction (New or RE) Planned Length Actual Length **1.00**  
Unit(s) accessed **679-470,477** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: **Active Sale 2** Post Sale **1**

Intended Purpose and Use: **silvicultural purposes**

Management Strategy: **Encourage Accept Discourage X Eliminate Prohibit**

This road system is not connected to any public or community road system

Closure Devices: **Barrier, Bridge removal**

Erosion Control: **water bar**

**AFRPR Closure Status:** **Active during sale activities. Inactive for post sale activities. Presently closed by bridge removal m.p.0.80**

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Future settings and salvage opportunities along this road..

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** Class I streams will require passage and timing. Timing window to be determined after final road reconstruction package is complete and before implementation begins. All crossings indicated below are existing culverts, m.p. 0.0-0.7. Repair to existing culverts will be completed per road condition survey completed by biologists during 1997 field season, survey is located in appendix J of FEIS

**RECON/PLANNED STREAM CROSSINGS:** **3 CLASS I 0 CLASS II 0 CLASS III 2 CLASS IV**

**AS LOCATED STREAM CROSSINGS:** **CLASS I CLASS II CLASS III CLASS IV**

**CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING**

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Reconstruction will not increase the footprint of the road, no wetlands concerns.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** Road location is not within 1/2 mile of any known bald eagle nest sites.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

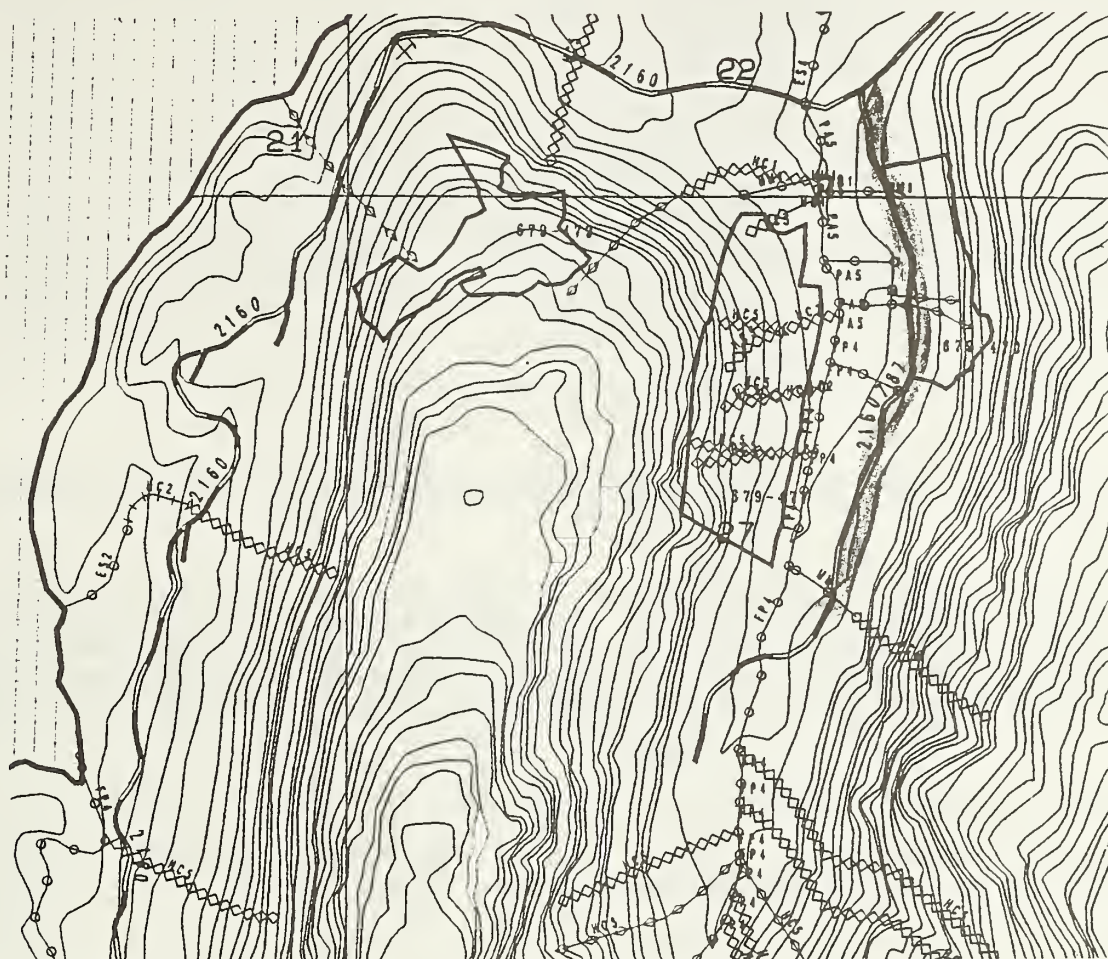
**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No Concerns

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** Foot access sufficient for future TSI.

**AS LOCATED:**

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 N



- X Rock Quarry
- 0--0--0-- CLASS I Streams
- I--I--I-- CLASS II Streams
- ◇◇◇◇◇ CLASS III Streams
- ◇--◇--◇-- CLASS IV Streams
- H Potential Heli Ldgs



- Existing Roads
- Construction
- Reconstruction
- Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)

Reconstruction should be minor from M.P. 0.0 to m.p. 0.70 only, existing cmps are all smaller than 1200mm dia. Repair replacement of cmps per road condition survey will be concurrent with timber sale use. Last 0.25 miles of road has been closed by bridge removal on the main class I stream and will remain closed for this project.

**Planned/Implemented:** (describe changes and rational):

**Rock Source(s) Location and Special Mitigation:** No special concerns.



11/10/97

**ROAD CARD: RECON/PLANNING/AS LOCATED**

EIS Name **Chasina** Road No. **2160795** M.P. **0.00** to M.P. **2.25**

Sale/Offering Area ROD Road #(s)

RE Construction (New or RE) Planned Length **2.25** Actual Length

Unit(s) accessed **679-447,450,446** Road Locator: **Oien**

**Road Management Objectives:**

Funct Class **L** Traffic Service Level **D** Hgw. Safety Act No Design Veh: **LT**

Critical Veh: **LB** Maint Level: Active Sale **2** Post Sale **1**

Intended Purpose and Use: silvicultural purposes

Management Strategy: Encourage Accept Discourage Eliminate Prohibit **X**

This road system is not connected to any public or community road system

Closure Devices: Barrier, Bridge removal

Erosion Control: water bar

AFRPR Closure Status: Active during sale activities. Inactive from m.p. 0.00 to 1.50 for post sale activities. M.p. 1.50 to m.p. 2.25, closed for post sale activities by pulling bridge.

Approved:

District Ranger

Date

**TIMBER/LOGGING SYSTEM/ADMINISTRATION RECON/PLANNED:** Moderate chance of individual salvage potential in the future.

**AS LOCATED:**

**FISHERIES HABITAT PROTECTION STREAM CROSSINGS RECON/PLANNED:** 3 CLASS I streams are crossed, two of these have existing cmps providing fish passage, one will require a bridge where the crossing has been removed(m.p.1.50) Timing window to be determined after final road reconstruction package is complete and before implementation begins. Repair to existing culverts will be completed per road condition survey completed by biologists during 1997 field season, survey is located in appendix J of FEIS

**RECON/PLANNED STREAM CROSSINGS:** 3 CLASS I 0 CLASS II 0 CLASS III 0 CLASS IV

**AS LOCATED STREAM CROSSINGS:** CLASS I CLASS II CLASS III CLASS IV

CROSSING # STREAM ID FLAGGING CLASS PASSAGE TIMING

**AS LOCATED CATALOGED STREAM CROSSINGS:**

**SOILS/WATER /WETLANDS RECON/PLANNED:** Reconstruction will not increase the footprint of the road, no wetlands concerns.

**AS LOCATED:**

Road location, design, construction and maintenance will meet all applicable BMP's per FSH 2509.22. Specific BMP's 14.2-14.3, 14.5-14.14.

**WILDLIFE RECON/PLANNED:** Road location is not within 1/2 mile of any known bald eagle nest sites.

**AS LOCATED:**

**VISUAL/RECREATION RECON/PLANNED:** No Concerns

**AS LOCATED:**

**CULTURAL RECON/PLANNED:** No Concerns

**AS LOCATED:**

**LANDS/MINERALS/GEOLOGY/KARST RECON/PLANNED:** No Concerns

**AS LOCATED:**

**SILVICULTURE: RECON/PLANNED:** TSI activities in 20-25 years. No planting planned, ATC access 1 mile from bridge

**AS LOCATED:**



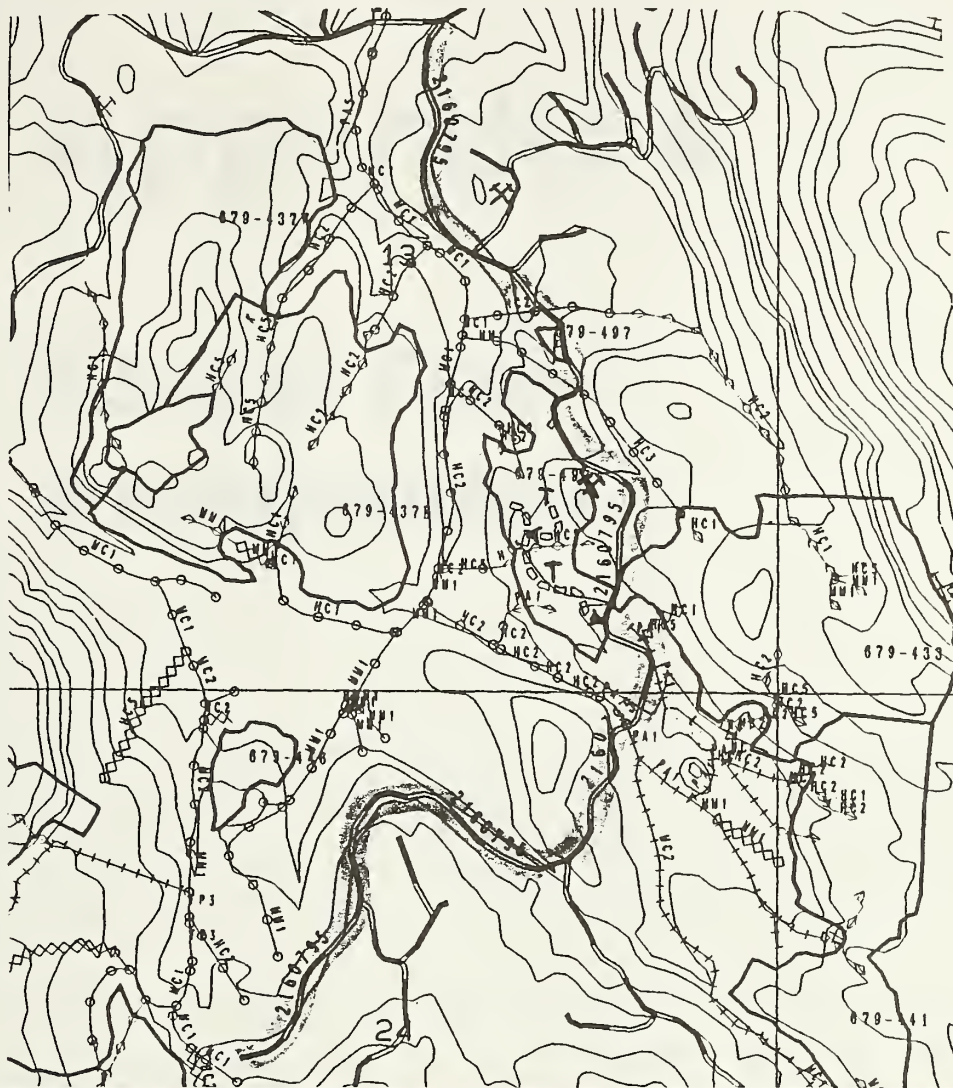
Road #2160795 Map #: CRG A-1  
 SCALE: 1" = 1320 feet

Aerial Photo: Yr. 91

Line

Photo #

^  
 N



- X Rock Quarry
- 0---0---0--- CLASS I Streams
- 1---1---1--- CLASS II Streams
- ◇---◇---◇--- CLASS III Streams
- ◇---◇---◇--- CLASS IV Streams
- T Temporary roads

- Existing Roads
- Construction
- Reconstruction
- Harvest unit

**Recon/Location Narrative/Design Considerations:** (Major drainages, road grades, future access, etc.)  
 Reconstruction should be minor with exception of culvert replacement with a modular bridge m.p. 1.50 (CLASS I stream) and the repair of any culverts identified in the road condition survey. Upon completion of silvicultural activities for this sale the modular bridge is to be removed, thus closing the road. Roads behind the road closure will be closed in accordance with State of AK closure regulations.

**Planned/Implemented:** (describe changes and rationale):

**Rock Source(s) Location and Special Mitigation:** No special concerns. Pits located as shown on map may be in limestone areas.



# **Appendix 4**

## **Forest Plan Amendment**



U. S. History 1.4

1870-1890

1870-1890

# Chasina Point Small Old-growth Reserve Adjustment

## Non-significant Forest Plan Amendment

Based on the project level analysis as described in the Old-growth Management Prescriptions and Appendix K of the Tongass National Forest Land and Resource Management Plan (1997), the Chasina Point Small Old-growth Reserve has been adjusted to better meet size, location and habitat composition. Specifically, the Reserve as mapped in the Forest Plan met the overall size requirement of small reserves, but lacked sufficient productive old-growth acreage to meet the specifications in Appendix K of the Plan.

The Secretary of Agriculture's implementing regulation indicates the determination of significance is to be "[b]ased on an analysis of the objectives, guidelines and other contents of the forest plan" (36 CFR 219.10(f)). The Forest Service has issued guidance for determining what constitutes a "significant amendment" under NFMA. This guidance, in Forest Service Handbook 1909.12 - Chapter 5.32, identifies four factors to be used in determining whether a proposed change to a forest plan is significant or not significant. These four factors are timing; location and size; goals, objectives, and outputs; and management prescriptions. An analysis of the factors is presented below.

**Timing** - The Forest Plan Revision was completed in 1997. The Old-growth Habitat Management Prescription in the Plan indicates the small mapped reserves have received differing levels of ground-truthing and integration of site-specific information in their design. During project level environmental analysis, for project areas that include or are adjacent to mapped old-growth habitat reserves, the size, spacing and habitat composition of mapped reserves may be further evaluated. Several timber sale projects are in progress forest-wide, but the Chasina EIS is one of the first project decisions that include the decision to amend the Plan.

**Location and Size** - Approximately 675 total acres were added to the Chasina Point Small Old-growth Reserve in order to meet the minimum productive old-growth requirements of small reserves. The area added to the Reserve was all in the Timber Production Land Use Designation. The acres were added from the adjacent VCU since enough contiguous productive old-growth did not exist in the current VCU. The productive old-growth added was located primarily within the 1000 foot beach fringe area and along streams in the area. This area is very fragmented naturally with mostly muskeg interspersed with the productive old-growth located as described above.

### Goals, Objectives, and Outputs

Goals - The Forest Plan Goal for Biodiversity is to maintain healthy forest ecosystems; maintain a mix of habitats at different spatial scales (i.e. site, watershed, island, province and forest) capable of supporting the full range of naturally occurring flora, fauna, and ecological processes native to Southeast Alaska. The adjustment to the Chasina Point Reserve is consistent with the Goals of the Plan.

Objectives - The Forest Plan Objectives include to maintain a Forest-wide system of old-growth forest habitat (includes reserves, non-development LUDs, and beach, estuary and riparian corridors) to sustain old-growth associated species and resources; and, to ensure that the reserve system meets the minimum size, spacing and composition criteria described in Appendix K of the Plan. The adjustment to the Chasina Point Reserve was specifically designed to meet the Forest Plan Objectives.

Outputs - Adjustment of the Chasina Point Small Old-growth Reserve will have minimal effect on Forest Plan Outputs, primarily because the majority of the productive old-growth added to the Reserve was included in the beach fringe and along streams.

**Management Prescriptions** - The Chasina Point Small Old-growth Reserve has been adjusted as noted in the Forest Plan Record of Decision and in accordance with the Old-growth Land Use Designation Management Prescription. None of the standards and guidelines associated with the Management Prescriptions have been changed.

**Conclusion** - Based on a consideration of the four factors above, I conclude adoption of this amendment is not significant in a NFMA context. This amendment is fully consistent with current Forest Plan goals and objectives. The amendment provides added detail on implementation of the Old-growth Habitat Management Prescriptions of the Forest Plan.

I hereby amend the Forest Plan with this non-significant amendment by adjusting the Chasina Point Small Old-growth Reserve as shown on the Record of Decision Map and documented in the project record for the Chasina Timber Sales Final EIS.



BRADLEY E. POWELL

Forest Supervisor

1/27/98  
DATE



# **Appendix 5**

## **Alternative Maps**





## Alternative 2

- Proposed Units
- Private Lands
- State Lands



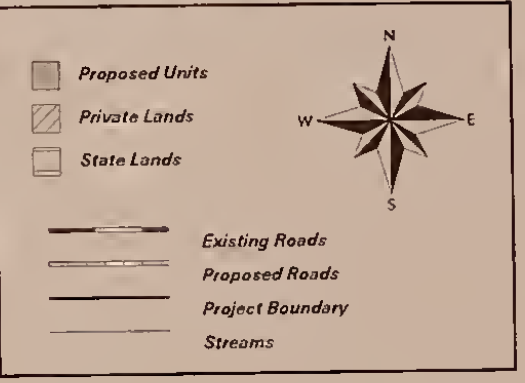
- Existing Roads
- Proposed Roads
- Project Boundary
- Streams







### Alternative 3







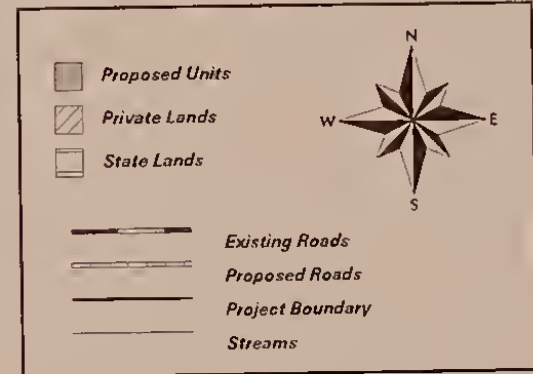








## Alternative 5









## Alternative 6

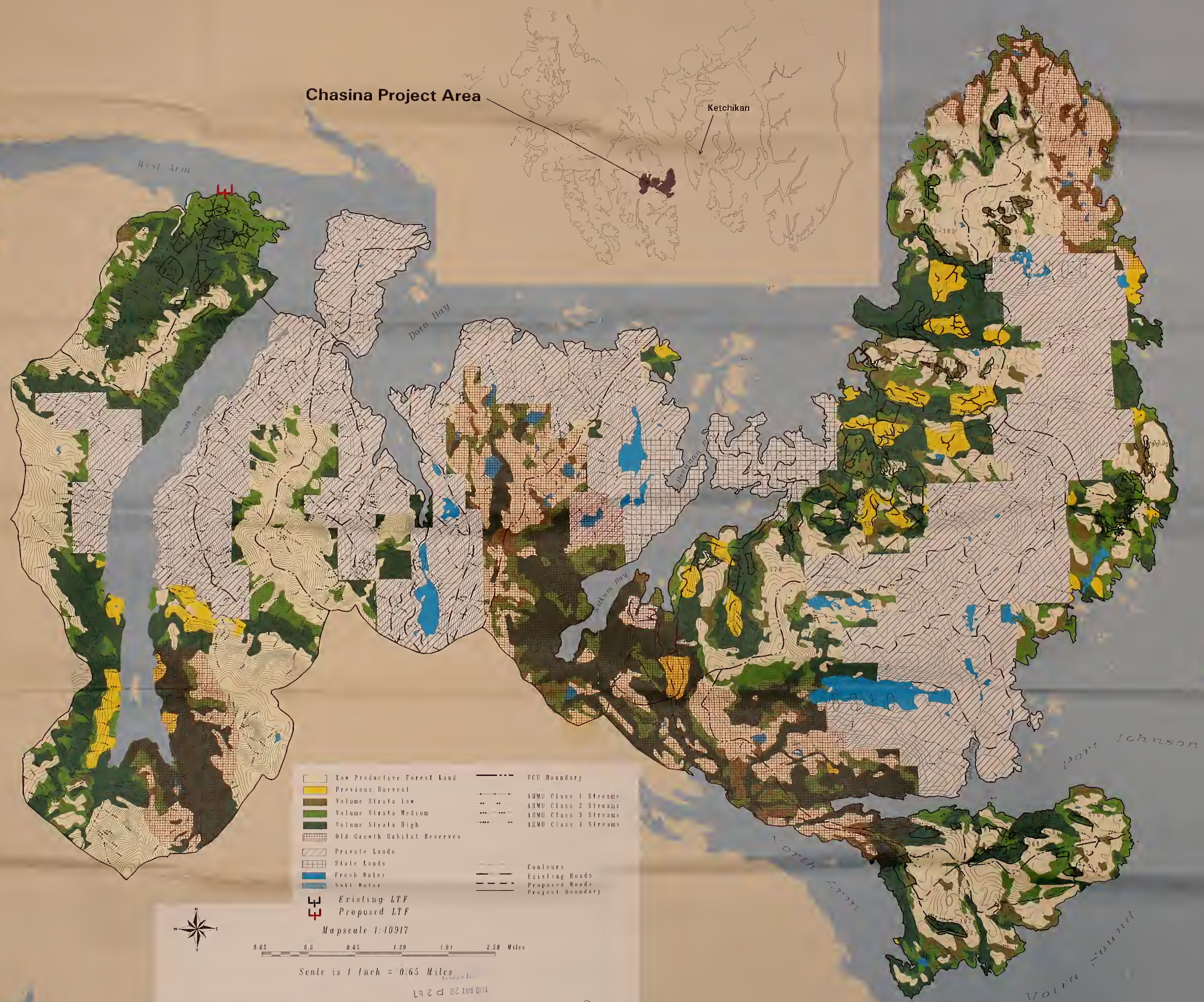
- Proposed Units
- Private Lands
- State Lands



- Existing Roads
- Proposed Roads
- Project Boundary
- Streams







# Record of Decision Map







Chasina Project Area



Map scale 1:40917

0.65 0.0 0.65 1.29 1.94 2.58 Miles

Scale is 1 Inch = 0.65 Miles

	Low Productive Forest Land		VCU Boundary
	Previous Harvest		AHMU Class 1 Streams
	Volume Strata Low		AHMU Class 2 Streams
	Volume Strata Medium		AHMU Class 3 Streams
	Volume Strata High		AHMU Class 4 Streams
	Old Growth Habitat Reserves		Contours
	Private Lands		Existing Roads
	State Lands		Proposed Roads
	Fresh Water		Project Boundary
	Salt Water		

Proposed LTF

Existing LTF

MAY 28 P 2:47

Existing Condition Plus Alt 6





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